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ORIGINAL COMMUNICATIONS.

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TREATMENT OF LARYNGEAL STENOSIS BY CORKING THE TRACHEOTOMIC CANNULA.

DR. CHEVALIER JACKSON, Philadelphia, Pa.

Laryngeal and tracheal stenosis as the result both of disease and of trauma, or of the two combined, is such an intractable thing, unless given the special attention and special treatment that its peculiar difficulties require, failure will surely follow, and the difficulties may be enormously increased by ill-advised operative procedure. A previous publication[1] has given the various methods of others as well as those methods of Dr. Ellen J. Patterson and the author that have yielded ultimate success in every case in which sufficient of the cartilaginous framework remained free from the initial necrosis. These methods have proven equally valuable to a few other surgeons who have deemed them worthy of trial without modification.

There is one very important factor in the methods referred to that has alone cured so many cases that it would seem to deserve particular emphasis, especially as it does not seem to have been generally appreciated at its full value. This method consists in corking the cannula with a specially shaped rubber cork that does not completely occlude the cannula. The amount of leakage past the cork can be regulated so as to force the patient to make strong inspiratory efforts to get sufficient air. The effect of this is to increase the lumen of the larynx. The orthopedic effect in in-

creasing the range of motion in cases which the mobility of the cricoarytenoid joint is impaired by local lesions such as arthritis, adhesions, etc., has been referred to in a previous article.[2]

The Corks. Corks made of cork-bark are so friable that after a short period of use there is great risk of a fragment being aspirated. Ordinary rubber corks of commerce are made of old junk-rubber and this is not only likely to become friable and permit crumbs of rubber to be aspirated, but it is so inelastic that it is altogether unsuited to almost any of the ordinary purposes of a cork, to say nothing of the relatively delicate corking of a tracheotomic cannula. For this reason we have been for years using a cork made by grinding pure rubber cord of suitable size on a high-speed emery wheel. We usually grind these in our own laboratory to suit the case and to fit a new cork with a diminished air-way from time to time as the treatment progresses. We use an electri-

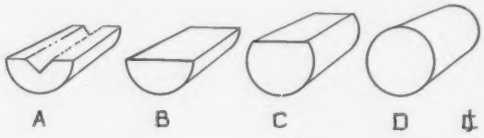

Fig. 1. Pure rubber corks of various shapes for corking tracheotomic cannulae. A, cork with large by-pass called a "three-quarter cork;" B, a "half cork;" C, "one-third cork;" D, "whole cork."

cally driven emery wheel 5 centimeters in diameter with a 5 millimeter face. A foot-power polishing lathe with such a wheel will answer nearly as well. Those who have neither of such appliances can borrow the use of one by visiting his friend the dentist or the jeweler or the surgical instrument maker. Pure rubber cord is sold by rubber manufacturers and is obtainable at the rubber stores in large cities. It is made of the best quality of rubber and contains no fabric, hence the trade designation "pure." As with all rubber goods it must not be old. The manner of grinding the corks is illustrated in Fig. 2. The various forms of corks are shown in Fig. 1. Any properly fitted cannula should permit the patient to wear the "one-third cork" (C), if any appreciable amount of air is going through the larynx, provided proper care is taken of the cannula as previously pointed out.[1] When this can be worn with ease and comfort, the "half cork" (B), should be substituted. After wearing this until the glottic lumen is increased, the "three-quarter cork" (A), should be tried. If the

discomfort is too great, or the patient's color is not good, the by-pass may be increased by grinding off a little more of the rubber, making "two-third cork." When the patient can wear a three-quarter cork with comfort, breathe and speak normally without the "ventriloquial voice" from inspiratory phonation that many of these cases have if the stenosis has been prolonged, especially in childhood, the complete cork may be tried. When the patient can exercise and sleep quietly with the complete cork in place the patient is ready for decannulation. In a recent case, say one in which a cannula has been worn for a few weeks, observation for

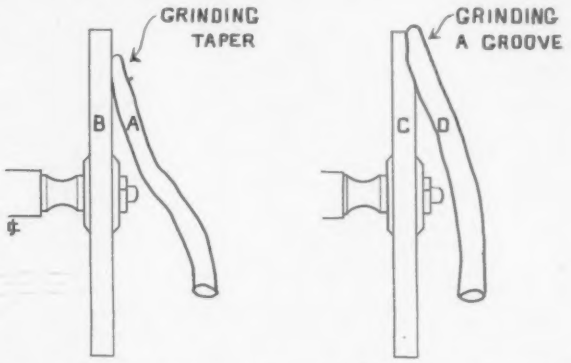

Fig. 2. Position in which end of pure rubber cord, A, is held in contact with the emery wheel, B, to form the regular plug-like taper similar to that of the ordinary cork. The cord is constantly rotated. A flat by-pass may be ground on the cork by holding it in one place without rotation. A grooved by-pass is made by holding the tapered end of the cord on one "corner" of the wheel as at C.

say 3 or 4 nights will be sufficient, if the larynx looks normal. In old cicatricial cases a few weeks or a few months may be required to be certain. In most of these long-standing cases, it is well to observe the case through an attack of "cold" or acute laryngotracheitis before final decannulation. These matters are referred to here only in a general way. Of course, if the cannula fitted closely to the tracheal walls the method would be impossible because the patient would be asphyxiated; but a properly fitted cannula never occupies more than half of the total area of cross-section of the tracheal lumen. Therefore with a properly fitted cannula there is plenty of air-way past the cannula when it is corked completely. If the patient has been wrongly fitted with too large a cannula a

smaller one must be substituted before the corking treatment is commenced. If there is very much purulent secretion coming up from the air passages, it is often wise to postpone the corking treatment or any attempt at decannulation until the secretion is diminished or until assured that the patient can remove all pus or other secretion. All the details of treatment of laryngeal stenosis and of decannulation as practiced in our clinic have been published. The present article is limited to the uses of corks, the important curative qualities of which do not seem to have been recognized before, nor appreciated since, they have been advocated by us.

The results obtained and the apparent therapeutic mechanism by which the results are obtained may be summarized as follows:

CONCLUSIONS.

1. One of the most important results is the prevention of the atrophy of the intrinsic muscles.

2. Not only is the atrophy prevented but the voluntary use of the accessory respiratory muscles seems to have increased their power in many cases.

3. There is reason to believe that the column of air forced through the larynx in forced respiration has some effect in dilating the larynx.

4. The forced respiration keeps the larynx freed of secretions which are more or less purulent and hence irritating.

5. The patient can cough effectively because all the air does not leak out the neck; and, in addition, the part normally taken by the larynx in the bechic cycle is in an increasing degree restored as the treatment is continued.

1. Peroral Endoscopy and Laryngeal Surgery.
2. Journal of Laryngology, XXXII, February, 1917.

THE BLOOD-CLOT DRESSING IN FRONTAL SINUS SURGERY.*

DR. GEORGE E. DAVIS, New York City.

The patient I present to the Society tonight illustrates the result of a new technique, so far as I know, as applied to the radical frontal sinus operation. Of course, the blood-clot dressing as employed in general surgery and particularly in mastoidectomy is familiar to most of you, for it is almost a third of a century (1886) since M. Schede originated the method of the organized blood-clot, imitating and aiding nature in wound repair, and some five years later, C. J. Blake of Boston, at the suggestion of F. B. Sprague of Providence, R. I., was the first to adopt it in the mastoid operation. However, the names that stand pre-eminent in popularizing this technique, as applied in general surgery and mastoidectomy respectively are Halsted and Reik of Baltimore, whose theses on this subject are classics worthy of careful study.

The progressive surgeon ever strives to improve his technique, inspired with the hope of attaining the perfect, or at least *ideal* operation. The ideal operation as defined by Reik "is one that submits the patient to least additional risk and offers the maximum assurance of cure in the shortest space of time with a minimum of deformity, or scar, as a sequel."

The blood-clot dressing is based on sound physiological principles and when successfully carried out in wounds containing dead spaces will almost uniformly shorten the duration of wound healing to one-third and often to one-tenth of the time usually required when the old method of packing the wound is practised. The advantages of the blood-clot dressing are rapid wound healing by first intention; the preservation of the contour of the operated region with little or no scar; and not least, from the patient's point of view, the after-treatment is negligible and painless. Moreover, if the blood-clot should fail to organize by reason of infection or lack of nutrition we may resort to one of two alternatives:—open the wound, cleanse and curet the wound cavity, allow it to fill with fresh blood and reclose with the hope of still securing primary reunion by the secondary blood-clot; this failing, we must fall back on the packing method, and after all, no time is lost so far as the latter procedure is concerned.

*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, Feruary 28, 1918.

Persistent preaching and practice, on the part of Reik particularly, have finally established, not only the sound physiological principle of the blood-clot dressing as applied in mastoidectomy, but most important of all, that success depends on thorough-going exenteration of all accessible pathologic tissue, together with strict asepsis.

The physiological basis of the blood-clot dressing depends, first, on the well-known antiseptic powers of normal circulating blood, which is enhanced when it coagulates or clots; second, the blood-clot fills in the dead space and forms a framework for the reconstruction of the particular tissue in which it is lodged. But as is well-known, also, the blood-clot loses its antiseptic power in about forty-eight hours, hence it is most important that *thorough exenteration* of all diseased tissue be carried out, observing strict asepsis, lest the clot become infected and break down, necessitating reopening of the wound and attempting the secondary blood-clot; or the slow, painful, packing method.

In the case presented this evening I employed the blood-clot dressing in a new region, the frontal sinus, with the object of obviating deformity and also to hasten healing,—and with what aesthetic results I invite your attention, as the case speaks for itself.

The patient, Mr. J. D. F., aged 39, consulted my brother, Dr. A. E. Davis, Nov. 8, 1917, on account of the condition of his left eye, who referred him with the following reports, requesting me to examine the sinuses with the view of ascertaining their etiological relation to the eye trouble.

History. For last six months patient complained of pain in the forehead at base of the nose, but especially over left eye. For the last six weeks there has been a swelling over the left eye inside the orbit, and to the nasal side. Lid tender and great fullness when he leans forward. Left eye turns down and out, double vision, vertical diplopia.

R. V. 20/15 minus: not improved.

L. V. 20/20 plus: not improved.

Ophthalmoscope. Right—retinal veins somewhat enlarged and tortuous; fundus congested.

Left—slight congestion of the fundus, but veins are of normal size.

Field of vision in the *right* eye contracted above, below and to temporal side. *Left* field apparently normal.

On inspecting the nose I found pus flowing from the left middle fossa with extreme tenderness on pressure over the roof of the

left orbit. Transillumination showed the left frontal sinus absolutely opaque. Unfortunately an X-ray was not available at this time and as the case was urgent I decided to radically operate the sinus without delay, for it was evident the eye was infected from the sinuses, probably through a perforation in the floor of the frontal sinus, otherwise through a perforation in the ethmoidal cells.

Technique. The usual external incision was made, beginning on side of the nose and extending up and out along the lower border of the brow a little beyond the middle of the orbital arch, but was extended later to the outer end of the arch because of the extensive size of the sinus. After retracting the soft tissues and the periosteum above, the sinus was entered through the anterior wall by removing with mallet and chisel a strip of bone about six mm. in width just above the orbital arch, extending from the supra-orbital notch to the articulation of the frontal with the nasal process of the superior maxilla. Later, this opening was extended outward to the temporal end of the orbital arch, and downward by removing a portion of the nasal process of the superior maxilla. The frontal sinus was filled with pus and granulations, the entire floor necrotic and communicating through a fistulous opening with a large post-orbital abscess containing extremely foul pus.

All the granulation tissue was curetted from the sinus and the infundibular orifice leading into the nose was enlarged by breaking and curetting the anterior ethmoidal cells which were infected.

The necrosis of the sinus floor extended well into the orbital arch rendering it very friable and avascular to such a degree that it was deemed advisable to remove the arch in its entirety.

With this complication marked deformity seemed inevitable and how to obviate the disfiguring defect caused by the loss of the bony arch was a problem demanding immediate solution if we wished to save the patient secondary plastic operations.

I had never attempted the blood-clot dressing in the frontal sinus operation but remembering the brilliant results obtained by its employment by many surgeons in mastoidectomy it occurred to me that the large percentage of successes of this method in the latter field with the added advantages of quick, painless healing and lack of deformity made it worth while to give it a trial in this case.

The peculiarity of the technique of the blood-clot dressing as applied here was a modification or rather a combination of the packing method and blood-clot method as practised from choice and not from necessity, on account of infection and breaking down of the clot; for in this case the packing preceded the blood-clot twenty-four hours, whereas, usually, when two methods are com-

bined, the packing follows the blood-clot dressing in about forty-eight hours if the latter becomes infected and disintegrates.

Two reasons suggested the preliminary packing of the wound for twenty-four hours with iodoform wool before essaying the blood-clot dressing. The first reason was the necrotic condition of the walls of the orbital abscess-cavity, all of which pyogenic tissue could not, without hazard, be entirely removed and which remaining would inevitably infect a primary blood-clot dressing, and the second reason for the preliminary packing was to mould and support the soft tissues of the orbital arch in order to preserve the normal contour with healing.

Save a single strand, one end of which was left protruding from the external temporal end of the orbital wound, and the other end through the infundibulum into the nasal cavity, the entire packing was removed at the end of twenty-four hours from the wound cavity and the latter allowed to fill with blood.

Twenty-four hours later the remaining strand of packing was withdrawn. On the third day half the stitches,—which were through and through silk,—were removed and the balance on the fourth day, when the wound was healed completely by first intention.

The patient left the hospital entirely well at the end of a week and returned to his home out of town.

The only intranasal treatment administered during the time spent in the hospital was the introduction of carbolated vaseline night and morning.

I had the patient report to my office for observation at weekly intervals for about six weeks.

The diplopia left him on the second day after the operation and the improvement in the condition of his vision is indicated by the following report of the examination made by my brother, Dr. A. E. Davis, on January 4, 1918:

R. V. 20/15: not improved.

L. V. 20/15: not improved.

Ad. 10°, ab. 6° surs., R. 1°, L. 1°, single binocular vision.

Ophth. Normal fundi. Fields normal. Works with comfort and no trouble with eyes or head.

As you will observe, notwithstanding the removal of the entire frontal wall of the sinus, orbital arch and floor of the sinus,—and I may say the sinus was large and extended to temporal side of the orbit,—the contour of the orbital arch is preserved with almost no deformity whatever and only a scarcely discernible linear scar.

42 West 77th Street.

ACUTE RETROPHARYNGEAL ABSCESSES IN CHILDREN.*

Dr. J. M. Brown, Los Angeles, Calif.

In presenting the following brief case histories of retropharyngeal abscesses in children, I wish to draw your attention to the seriousness of these lesions if left undiagnosed.

These abscesses are due to an infection of one or more of the lymphatic glands, which are located in the retropharyngeal space, that space which lies behind the pharyngeal mucous membrane and in front of the vetrebral column, and extends from the base of the skull to the level of the cricoid cartilages. These glands which are numerous in infancy begin to atrophy about the fifth or sixth year. They are in intimate relationship with the rest of the lymphatics of the upper respiratory passages, so that any infection in the nose, throat, or mouth may produce an inflammation of these glands resulting in suppuration. Particularly does this seem to be the case in streptococcic infections. The vast majority of cases reported wherein bateriological examinations were made showed the presence of this group of organisms.

An examination of statistics shows that 96 per cent of these abscesses appear in children under six years of age, and that 50 per cent occur in children between the ages of six and twelve months. There does not seem to be any special predilection for any class of children. At least in my cases they occurred in the apparently healthy as well as the poorly nourished. Tonsils or adenoids had not been removed from any.

The diagnosis of this infection presents some difficulties, at least to the general practitioner, as only one of my cases was correctly diagnosed, and this by a pedriatician. These cases usually have a history of some naso-pharyngeal infection or some illness which can be traced to an infection of the upper respiratory tract. The primary lesion may be entirely recovered from or it may merge into the symptoms presented by the retropharyngeal abscess. As the abscess develops there is a return of fever or an increase in that which is already present, together with the general symptoms that accompany any infective process. The local symptoms are

*Read before the Western Section of the American Laryngological, Rhinological and Otological Society, Los Angeles, February 21, 1918.

some interference with respiration and deglutition. Owing to this interference with respiration, many cases are diagnosed as some form of croup. The particular variety of dyspnoea that I have noticed is that of an inspiratory type. This is one of the best diagnostic symptoms we have. The child is markedly restless, does not sleep well, tries to change the position of its head frequently, in the hope that it may ease its breathing. Choking spells are common in which the child almost strangles, and in one of my cases it had actually ceased breathing before a tracheotomy was done and respiration restored. A peritonsillar abscess would be the only local lesion to differentiate from and the position of the abscess will decide this.

I would regard with suspicion any child having trouble with respiration or deglutition and immediately examine the pharynx. If unable to properly see the throat, feel with the forefinger. Authorities differ as to the seriousness of this affection. I regard it as a very serious lesion when undiagnosed. Koplik, whose experience is probably as great, if not greater, than any authority, says he has never seen a fatal result in cases that have gone on to spontaneous rupture, but is careful to emphasize that he does not recommend this treatment. The majority of other authorities, notably Bokai, Jr. and Sr., Henoch, Goldstein, Pierson and Muerhoff, call attention to cases where spontaneous rupture resulted in death.

In one of my cases the child was undoubtedly choked to death by the rupturing of the abscess, emptying a large amount of thick pus into the oro-pharynx, a sudden inspiration filling the larynx.

A post-pharyngeal abscess having been diagnosed, the child should be placed in some institution where it can be watched carefully and as soon as pus is believed to be present it should be evacuated. Pierson believes every case ought to be opened and drained externally behind the sterno-mastoid, and to do this all cases should be anesthetised. He also states that giving an anesthetic and opening the abscess internally is very dangerous, and that it is also very bad to have the child discharging pus into the pharynx, which may find its way into the larynx and lungs, causing pneumonia. I do not agree with him as to the necessity of an external opening except in a very few cases. In cases, where the opportunity permitted, I had the child lying down, head on one side and slightly lower than the feet, thus allowing pus to run out of the mouth in the easiest manner. With the aid of an ordinary tongue depressor, I inserted a pair of fairly sharp dressing forceps into the abscess, and as I

came out widened the blades. A child usually makes a rapid recovery. There is very little drainage after a few hours and this find its way into the stomach, where it is taken care of, or, at most, causes an intestinal disturbance.

Case I. Baby B., male, age 1½ years, previous history negative, had always been a healthy child. About ten days ago the baby had an ordinary cold, apparently the same as the other children in the family were having. The baby did not seem to recover as rapidly as the others, though able to be up and around the house up to the preceding day, when it remained in bed, refused nourishment and slept but little. There was some cough, croupy in character, according to the mother.

A physician was called who diagnosed the case as croup and left some medicine. The child had a very restless night. The next morning it had a choking spell and they called in a physician at once. When the doctor arrived the child was apparently dead, no respiratory movements being detected. As rapidly as possible, he did a tracheotomy, applied artificial respiration and was rewarded with a return of breathing.

The case was taken to the French hospital and I was sent for. On account of the history of the case I examined the pharynx and found a mass almost filling the oro-pharynx. This I opened and obtained a large quantity of pus. After this had drained the child could breath freely with the tracheotomy wound closed, so this was immediately sutured. There was an uninterrupted recovery.

Case 2. Baby B., female, age 11 months, was seen at the Children's Hospital. The history from the mother was that the child had been ill with an ordinary cold for about one week before admittance. The previous day baby had become worse, refusing to eat, slept but little and was very restless all the time, had several severe coughing spells. A physician was called, who after a careful general examination advised that the baby be taken to the Children's Hospital. Examination: temperature 102, pulse 150, child was very pale, looked exceedingly ill. Distinct inspiratory dyspnoea was manifested. The chest examination by the interne was negative. On examining the throat a large mass was found on the pharynx, almost filling the lower portion of the oro-pharynx. This was opened and a considerable amount of pus obtained. A specimen sent to the laboratory contained streptococci in pure culture. The baby made a rapid recovery.

Case 3. Baby E., Italian, male, age 2 years. Had an acute tonsillitis two weeks previously. The child was ill for about five days, being confined to the house during this period but not in bed. As I was attending another member of the family at this time I had a chance to watch the case every day. The child picked up fairly rapidly after this, eating and sleeping regularly. My visits ceased about this time and I did not hear anything further until just two weeks after the onset of the tonsillitis. I was called to the house one morning by the mother, who stated that the little boy was choking. On my arrival I found the boy in his mother's arms, gasping for breath. I examined the throat and found a large mass in the posterior wall, which I opened, obtaining much pus. The mother stated that the boy had had no symptoms until the previous day, when he had refused anything to eat, had some fever and was very restless. He had a choking spell in the early part of the night when she called in a physician nearby, who said it was croup and ordered steam inhalations for the boy. He had several of these choking spells during the night. This boy made an uneventful recovery.

Case 4. Baby F., age 6 months; had a cold for a week, the last three days growing progressively worse, baby taking very little nourishment, on the last day practically none. There was difficulty in breathing at times. This morning the baby had a violent choking spell, during which it coughed up a considerable amount of pus and ceased breathing. I was sent for and on arrival I found the baby dead. I examined its throat and I found the oro-pharynx full of thick pus and a large abscess cavity in the posterior pharyngeal wall. This child undoubtedly died from the small larynx having been filled with pus during a sudden inspiration.

Case 5. Baby G., age 5, female, had been ill 48 hours with an acute cold. I was called on account of an earache. The physician in attendance requested me to be sure and look at the pharynx, as it looked boggy to him. Examination, the right ear was bulging and was opened. The tonsils were acutely inflamed and on the posterior wall of the pharynx to the right was a swelling. The doctor and I both cautioned the mother to watch for any interference with swallowing or breathing. One week later she called up and stated that that morning the child had expectorated a large amount of pus. This had followed a restless night. When seen a few hours later there was evident an abscess cavity in the posterior wall.

1002 Brockman Bldg.

SPONTANEOUS RECOVERY FROM LATERAL SINUS THROMBOSIS—A CASE WITH VERY UNUSUAL FEATURES.*

DR. RICHMOND MCKINNEY, Memphis, Tenn.

Although recovery from lateral sinus thrombosis without operative treatment is regarded as a possibility, and may occur more frequently than we realize, our experience has taught us that unless the clot is turned out, with the establishment of free circulation through the jugular vein, practically all these cases go to certain and usually speedy death, or if they do weather the immediate symptoms of sinus thrombosis, there will be a later complication, such as a pulmonary abscess, which will bring about a fatal termination. It is these facts, taught us through accumulated experience and observation, and also the further definite knowledge that timely operation results in the saving of at least fifty per cent of these cases, which cause us to urge prompt operative intervention in this condition.

It has occurred to me that the case which I am about to describe in detail has so many unusual features that it may be interesting, and for this reason I am reporting it on the present occasion.

On September 4, 1917, I was consulted by John B. S., of Memphis, aged eleven years. He said that his right ear had been aching for two days. He attributed this to getting water in his ear while swimming. For two months, however, this ear had been discharging, off and on, and several weeks previously, while in a summer camp in the North, he had been in the camp hospital for ten days, suffering with the same ear. The night before he consulted me, he had had a great deal of pain in the ear, and it had been irrigated with warm water, without relief. This morning it was quite painful.

Examination of the ear showed a very small quantity of pus in the canal, with a median perforation of the membrana. His temperature at ten A. M. was 100 F. On deep pressure slight pain was complained of in the mastoid tip. The boy was sent home, with instruction to have the ear occasionally irrigated with warm boracic acid solution, and to use the customary ice-bag to the ear. That evening his father reported him as doing nicely, and said it was not necessary for me to see him. The next morning it was reported to me that the boy had had a comparatively comfortable

*Read before the American Laryngological, Rhinological and Otological Society, Atlantic City, May 30, 1918.

night, but in the evening, since he had had some fever during the day, I saw him at his residence, but saw no reason to make any change in the treatment then being used. The evening of the next day the boy's father reported to me that the little fellow had had no fever all day, and was feeling fine. The next morning I was 'phoned that the temperature had gone higher than 104 F. that morning. He was seen at this time by the family physician, Dr. E. D. Mitchell, who reported to me later that he had found pus in the canal of the affected ear. The temperature was brought down with phenacetine and sponging. A blood examination was reported negative as to malarial parasites, but there was a polynuclear percentage of 92. No leucocyte count was made. In the evening the temperature still running high, going to 105, consultation was had with Dr. P. M. Farrington. At this time I enlarged the opening in the membrana tympani by a free incision, but no pus was seen in the canal prior to this, nor after the incision was made. There was slight, if any, mastoid tenderness. At two o'clock on the morning of the 8th, the temperature was 105 F. plus, but went down steadily, without antipyretic measures, to 102⅕ F. at ten o'clock in the morning. From that time on it began to rise, until at three o'clock it was 104 F. There were no rigors, sweats or other indications of intracranial involvement, and all reflexes were normal, but after another consultation, it was decided that the mastoid should be opened. At four o'clock a simple mastoid operation was done. As was to be expected in a mastoid which had been subjected to more or less constant inflammatory attacks, the bone overlying the antrum was eburnated, with no pus, until the antrum was entered, and then only a very small quantity of pus, and some granulations. The antrum was completely exenterated, leaving a perfectly smooth cavity, with no sinuses apparent in any direction. The temperature at the time of operation was 105 F., pulse 128. At 6:15 P. M., about an hour after the operation, the axillary temperature was 102.8 F., pulse 140. A Murphy drip of 5% soda solution had been begun immediately on bringing the patient from the operating room, but this was discontinued at six o'clock, since he was unable to retain it. The temperature steadily dropped, until at 8:30 P. M., following a profuse sweating, the temperature had gone down to 98.8 F., by the mouth, with pulse 120. At two in the morning the temperature was subnormal, and a short while afterward it began to go up again, until at 8:20 that morning it was 105⅕ F., pulse 120. The temperature was reduced from time to time with ice-water sponging. The temperature fluctuated, with the patient sleeping a great deal. The afternoon of the day sub-

sequent to the operation, he complained of pain in the right shoulder, the temperature going up in the afternoon to as high as 104⅘ F. The child could not stand to be sponged, and was chilly and shaking, besides being quite somnolent. An ice-bag had been kept to his head constantly, and routine treatment, such as phenacetine occasionally, and small doses of quinine, had been given. The temperature continued to run up and down, being reduced largely through sponging. On the morning of the 10th, two days after operation, I dressed the mastoid wound, and found it perfectly clean, with no pus. At this time the little fellow was complaining of a painful spot at the end of the spine, where a small red swelling was noticed, and it was anticipated that an abscess was forming here. A graphic temperature chart was begun on this day.

It is unnecessary to recapitulate the temperature variations in this case in the body of this report, since the accompanying graphic temperature chart shows these, so I shall confine my report to the essential details and noteworthy features of the clinical course.

A blood count, made September 12th, four days after the operation, showed 6200 leukocytes, with a polynuclear percentage of 84. This indicated the low resistance of the patient. On the 14th there were 9600 leukocytes, with 63 per cent polynuclears. The tenderness beneath the right scapula had on the morning of the 15th developed a swollen area, and the attending physician, Dr. Mitchell, thought it contained pus, and under light ether anesthesia this was opened, and about a teaspoonful of yellow pus removed from beneath the border of the scapula. This pus was of the ordinary staphylococcic variety. Urotropin, five grains, three times daily, was ordered. On the afternoon of the 17th inst., the place at the end of the spine, where pain had been complained of, had developed a swelling, and under local anesthesia this was opened by Dr. Mitchell, a dram or so of pus, similar in character to that of the previously described abscess, being removed. The child complained at intervals of chilly sensations, and as will be noted from the accompanying graphic chart, these chilly sensations came on at the time the temperature started down, and there then came an immediate temperature reaction, this shooting up to between 104 and 5 F. This characterized the patient's condition almost from the beginning of my attendance upon him, and as will be noted, the rigors and temperature course were typical of a sinus thrombosis with occasional detachment of clots into the circulation. The abscesses, too, were evidently metastatic, and confirmed the strong suspicion that this was a case of sinus thrombosis. Evidence of any other kind, however, was lacking. The eye grounds were per-

fectly normal. There was no jugular rigidity or tenderness, and the boy apparently was in good condition, other than a rather pronounced degree of emaciation.

A blood culture was negative as to bacteria of any kind, and the leukocyte count, as has been mentioned, was not especially high, while the polynuclear percentage was nearly normal at the last count.

Further consultation was had on the afternoon of September 20th, and it was decided to reopen the mastoid wound, and to explore the lateral sinus. The boy was taken to the hospital immediately, and on opening the wound, we found just what was to be expected in a healing mastoid wound, there being only a few drops of pus, the cavity being filled with granulations. The very dense bone was then carefully removed back to and around the sinus, exposing it to the knee. The sinus wall was greatly thickened and grayish, but a slight pulsation was noticeable. It was then determined to wait a few hours before opening the sinus, and the boy was returned to his room, and given stimulation for his at this time rather weakened circulation. Immediately following the operation, as will be seen from the temperature chart, the temperature dropped to subnormal, gradually going up, and again down and up, but ran an almost flat course from that time on, and the little fellow made an uneventful recovery, with no complications of any kind, and in the second campaign for the sale of Liberty Bonds, distinguished himself by disposing of a half million dollars worth of these.

I submit this case report on account of its to me very interesting features. I am convinced that there was a lateral sinus thrombosis, located above the knee of the sinus, but not entirely occluding the sinus, and I believe that this infection took place through venous channels, as the most careful investigation failed to disclose any involvement of the bone anywhere near the sinus wall, and, as I have said, this bone was very dense in character. The question that occurs to me is, what bearing removal of the overlying bone had upon this reovery by, I may say, crisis, and was this merely coincidental? No doubt surgical removal of the source of infection was the cause of the child's ultimate recovery, but the change came so quickly after the second operation that I wonder what influence this had upon it. However, we are confronted by the positive evidence, as shown by the history and temperature record, that sepsis magic wand, we had a spontaneous change, and prompt recovery of the patient.

existed in all of its activities at the time of the second operation, and then, when this was performed, almost as though touched by a

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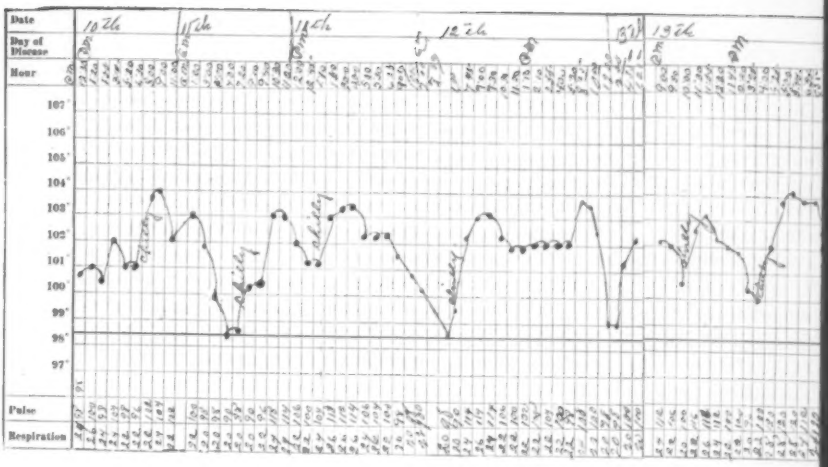
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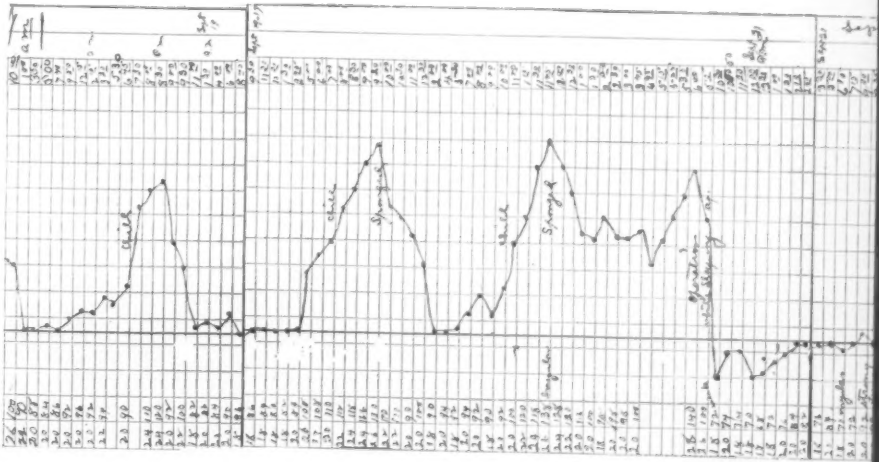

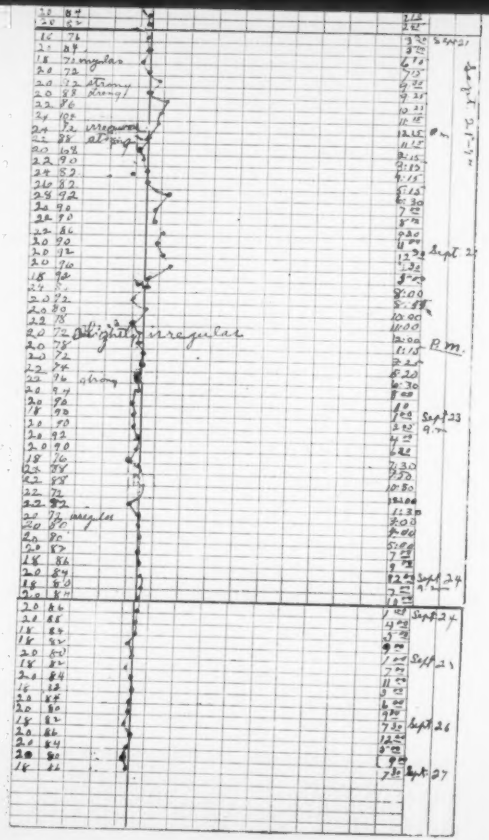
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OZENA. EXPERIENCES WITH VACCINE PREPARATION AND USE.*

DR. HARRY A. SCHATZ, Philadelphia, Pa.

In the fall of 1915, having had my attention aroused concerning the subject of ozena by Dr. Ralph Butler, I undertook to isolate the bacillus (or coccobacillus) foetidus ozenae of Perez—the organism described as the exciting factor in this disease by Dr. F. Perez in 1899—with the hope of repeating the successes reported by him and others with vaccine therapy.

The references I consulted—among them Mazza, Safranek, Guggenheim of St. Louis, Hofer and Kofler, and others—nearly all gave glowing accounts of the results of vaccine treatment. From them I learned the story, which you may all know, that Dr. Fernando Perez, ambassador to Vienna from Argentine Republic, while engaged in the study of the bacteriology of atrophic rhinitis—better known as "ozena"—after eliminating the more familiar organisms, encountered a rather small strange organism whose colonies he claimed emitted the characteristic "ozena" odor, and which, when administered in vaccine form, gave cures in some patients and marked improvement in others. He employed a polyvalent vaccine containing seven different strains of the organism. Furthermore, to convince the medical world of his discovery, Perez furnished pure cultures and details of his method of procedure to Hofer, a well-known bacteriologist, who, with Kofler, repeated Perez's work (with some modifications or improvements), employing a vaccine of human strains and one dog's strain, and published a report confirming Dr. Perez's claims. Further, I learned that Perez describes the organisms as pleomorphic, non-motile, staining well with the usual aniline dyes, but gram-negative, none spore-forming, growing well on ordinary culture media, aerobic and facultative anerobic, that it does not produce a pellicle on liquid media, does not liquefy gelatin, produces no gas bubbles on potato, never coagulates milk, often, however, rendering it alkaline, produces ammoniacal fermentation of urine, and gives rise in all cultures to the characteristic smell of the disease. Also, that it is pathogenic for the guinea-pig, mouse, pigeon and rabbit; the intravenous injection in the rabbit causing either an acute, sub-acute or chronic infection; that in all these types of infection, at the beginning, the coccobacillus causes almost always a very intense nasal secretion, sometimes hemorrhagic.

At this juncture, it is necessary to burden you with some details in bacteriologic technique. Perez took a little of the secretion in

*Read before the Philadelphia Laryngological Society.

the middle meatus of the nose, and inoculated with it some tubes of agar, gelatin, coagulated serum and peptonized bouillon, placed them in the incubator, and on the following day separated the different species found in these mixed cultures, sometimes using the plate method, but oftener recognizing the colonies by their gross appearance and odor. This Hofer and Kofler could not do, so ultimately they adopted the method of injecting a portion of a mixed bouillon culture into the veins of a rabbit, and recovering the organism in pure culture from the rabbit's nose. Thus, instead of employing Perez's bacteriologic method, it seemed wiser to follow Hofer's method, inasmuch as Hofer writes in his early report that "the identification of the organism according to Perez's data was not possible." Hofer and Kofler's method was to drop the greenish semi-solid crusts into several bouillon tubes, incubate for from 12 to 24 hours (not more) and then to inject about 1 c.c. to 2 c.c. into the marginal vein of a rabbit's ear. In twelve hours they claimed a pure culture could be obtained from the rabbit's nose, or from the heart's blood if the rabbit died—death occurring in 24 to 48 hours after a large dose was injected. They also found a purulent nasal discharge, sometimes hemorrhagic. If the rabbits survived they later showed the atrophy and crusting typical of ozena. Hofer also found the same organism in the nose of healthy dogs, but in no other domestic animals. Hence, his inference that it is from the dog that the contagion originated.

Guggenheim of St. Louis, using a vaccine first of cultures derived from Hofer's laboratory, reported good results; later he employed cultures that he had isolated himself, employing Hofer's method with but minor modifications; e. g., the bouillon culture was incubated for not more than 18 hours, and, as in Hofer's method, that tube which emitted the strongest odor of ozena was the one selected for injection into the rabbit.

Having obtained from Dr. Kolmer, the director of the Pathological Laboratory at the Philadelphia Polyclinic, the freedom of the laboratory, culture media and the use of rabbits, I proceeded with enthusiasm, employing the method of Hofer as described by Guggenheim. For several days after inoculation the rabbits were observed for the development of a purulent nasal discharge. In the meantime, I planted cultures from the nose on agar every day, and studied the organisms obtained, comparing them morphologically and biologically with the Perez organism. Unfortunately, my rabbits did not develop marked nasal discharges, certainly never hemorrhagic, but annoying sloughs of necrotic abscesses occurred at the point of injection on the rabbit's ear. Sometimes a scanty

nasal discharge was noted, but none of the organisms isolated possessed all of the characteristics of the Perez organism. (Rabbits with nasal discharges were rejected in these experiments.) So I wrote a letter to Dr. Guggenheim, explaining my troubles, and he referred my letter to Dr. Klenk, who was more familiar with the laboratory technique. From Dr. Klenk I received a kind letter advising me that sloughs did not develop if the vein was punctured at the first attempt, and no culture fluid allowed to infect the tissues about the vein. To facilitate this the vein was rendered prominent by friction with xylol, then the xylol removed with absolute alcohol, the bouillon culture diluted with normal salt solution, and the needle left in situ in the vein till a few drops of blood flowed out before it was extracted.

No further sloughs occurred but still the rabbits failed to develop the nasal symptoms, nor did any die except after weeks of illness and emaciation. On autopsy, those that died exhibited no intranasal pathology such as others described, nor did I obtain the Perez organism from the heart's blood of the rabbits that died, or were chloroformed to death, a few days after inoculation. Likewise, the cultures obtained from the nose failed to produce an organism that resembled in every particular the coccobacillus. The descriptions of the germ, as I obtained them, were too meagre, it seems. As soon as I obtained a colony from the rabbit's nose that resembled that described by Hofer, I stained a smear, and if it bore any resemblance to a coccobacillus, Dr. Ersner and I tested its motility and stained it by Gram's method. Any that were motile or Gram positive were rejected. Those that were not, were planted on the various culture media, and their cultural and biochemic characters studied.

Now with what success did Perez, Hofer and the others who worked along these lines meet in their bacteriological technique? Well, Perez in his first report (in 1899) tells us he found it in eight out of twenty-two cases of atrophic rhinitis, but of the twenty-two only eleven were cases of atrophy with fetor, and he found it in seven of these eleven cases. The Abel-Loewenberg organism or the Bacillus mucosus, he found in seventeen out of these twenty-two cases. This organism was reported to be the etiologic factor by two independent investigators—Abel and Loewenberg—and was so recognized by others prior to Perez's work. It has since been identified as a strain of the Friedlander organism. Perez claimed that his organism was the primary etiologic factor, causing the fetor, while the Bacillus mucosus caused the typical secretion with crusting. When injected into a rabbit, his organism had a selective

action on the nasal mucosa, causing congestion and hemorrhagic purulent nasal discharge.

Hofer in 1913 reported the recovery of the Perez organism in eight out of fourteen cases, also demonstrated positive agglutination in two out of the eight cases of ozena, but obtained ten negative results in ten normal patients.

McGowan, who worked with the organism causing canine distemper, expressed the view that the rabbits employed by Hofer and others may have been suffering with canine distemper, hence they obtained cultures of the Bacillus bronchisepticus—an organism resembling the coccobacillus of Perez in almost every particular, and with difficulty distinguishable from it.

Horn of San Francisco, who began work with Hofer's cultures, obtained but poor or indifferent results in his earlier efforts, both as regards bacteriological findings as well as regards cures. In a later report, 1916, he attributes his failure to the fact that he, like Perez, Hofer, Guggenheim, Burckhardt and Oppikofer, had erred in regard to the motility of the Perez coccobacillus; viz.—that it had proved to be motile in his studies, whereas prior to that, he and others were seeking to obtain a non-motile coccobacillus. Horn gives a lengthy description of its morphology, biology, biochemic, and a little about its pathogenic and agglutinating characters. Its colonies he designates as "coli-like," its odor sickening, not characteristic of ozena, flagella are six to eight in number. He further states that it coagulates milk with acid production, whereas Perez says it never coagulates milk and renders it alkaline. Horn also gives a detailed comparative chart differentiating the organism from the Bacillus bronchisepticus which it so closely resembles.

Murray and Larson in THE LARYNGOSCOPE, November, 1915, report their experiences. They obtained cultures from Hofer in 1914, inoculated eleven rabbits with it, none showed any nasal discharge, nor any inconvenience. They were killed in from seven days to three months, but no change found in the turbinates. To enhance the virulence a number of young rabbits were inoculated, of which number four died. The organisms were recovered in a more virulent form from the heart's blood, in some cases from the nasal mucosa. They were unable to obtain the organism by Perez's method. Rabbits injected with the more virulent strain resulted in fifteen deaths in one to five days. No nasal discharge observed. Cultures from the heart and nose gave the following bacteria: 1. Streptococci. 2. Staphylococci. 3. B. mucosus. 4. B. pyocyaneus. 5. B. coli. 6. B. proteus. They could not obtain real agglutination of the Vienna strains with serum from ozena cases. Complement fixation

tests also proved negative. They treated twenty cases with the Perez vaccine and observed clinical improvement, but could not say as yet if it was better or more permanent than what other vaccines produced.

Likewise, Horn and Victors, employing a vaccine of their motile coccobacillus, conclude their report in 1916 by saying that they observed most marked loss of fetor and less crusting or none at all, but cases show a tendency to relapse if treatment is stopped.

Hofer and Kofler in 1916 exhibited nine cases as cured. By cure they mean no fetor, no crusts, musoca looking normal and moist. Of these nine cases three were cured completely for one-half, three-quarters and two and a half years respectively. The rest were temporarily improved. Eighteen per cent were refractory to treatment. The fetor is easiest remedied apparently, but of course atrophied tissues are not restored by vaccines. They recommend that the vaccine be fresh (not over three months old) and made from a virulent strain.

Hajek tried Hofer's vaccine and claims that it produces nasal congestion, hence the improvement, but he cannot hope for permanent cure because it does not restore normal glands and turbinates.

Finally, Horn in a paper published in 1917, expresses agreement with Perez that the Bacillus foetidus ozenae, or "B. rhinosepticus" as he calls it, is according to bacteriologic and vaccino-therapeutic results, the primary etiologic factor, while the B. Friedlander is a secondary invader and secondary in importance, though at times its effects predominate in the symptoms. He subdivides ozena cases into 1. Ozena cases, 2. Sinus cases, 3. Friedlander type cases, in which there is some odor, excessive mucoid discharge, no crusting, and in which the bacillus rhinosepticus is never obtained; but the B. Friedlander predominates usually. He adds that improvement is never observed in any type of case from a vaccine of the Friedlander organism, whereas the B. rhinosepticus vaccine gives improvement in all cases but cures are rare. They tend to relapse.

Dr. Ersner, who supplied me with material from ozena patients, and who subsequently relieved me of much of the bacteriologic work, will now report the results of his work as well as our joint findings in treating patients with a vaccine. In brief, we obtained marked improvement in most of our cases (possibly one cure) with a polyvalent vaccine made up from B. mucosus Friedlander cultures derived from ozena cases.

1408 Spruce St.

OZENA. 1. VACCINOTHERAPY. 2. RESULTS OF SEROLOGIC, ANTIGENIC AND FOOD ANAPHYLACTIC TESTS.*

DR. MATTHEW S. ERSNER, Philadelphia, Pa.

In the course of our bacteriological work we found, as have other investigators, numerous cultures of the Bacillus mucosus of Friedlander. From personal conversation and from the literature, I have learned that the Friedlander bacillus has been used and is being sold on the market as a specific vaccine for ozena. In eleven cases out of sixteen we isolated the Friedlander organism. Not being successful with the methods employed, I thought it best to utilize the material at hand and, therefore, prepared a polyvalent vaccine consisting of eleven strains of the Friedlander organism. On two occasions we thought that the coccobacillus of Perez was isolated, but five agglutination tests with the patients' sera were found negative. We had no immune animal sera for the Perez organism, for we at no time isolated it. We, therefore, discontinued the search for the Perez, Hofer and Kofler organisms. The vaccine was prepared in the usual manner and administered subcutaneously; the initial dose for adults being 500,000,000 and which was rapidly increased. I found that there was no improvement unless a large dose was administered and a general reaction resulted. The results obtained with this vaccine were gratifying but not entirely satisfactory, for the improvement was only temporary, although worth the trouble. At first the crusting diminished and the odor lessened and in three patients the odor and crusting entirely disappeared. One patient showed distinct hypertrophy of the nasal mucosa with complete recovery. This Society had the pleasure of seeing some of these patients when my chief, Dr. Coates, presented some of them to the Society in 1916. There is a recurrence of the symptoms in about six or eight weeks after the vaccine is stopped. In our series, there were only two exceptions, one a girl, age 15, who had all the typical symptoms of ozena but who made a complete recovery, for her turbinates show distinct hypertrophy. The other patient, whom I saw five months after the vaccine was stopped, was symptomatically cured, for there was no crusting and no odor.

*Read before the Philadelphia Laryngological Society.

To briefly summarize our results with the vaccine, we treated sixteen patients, fourteen my own, at the Pennsylvania Hospital, and two at the Polyclinic Hospital, by Dr. Schatz. Nine patients responded to the treatment, one made a complete recovery, another is symptomatically cured, seven recurred and the remaining seven did not respond to treatment.

Dr. Horn of San Francisco furnished us with his vaccine and this was administered to two patients, eight doses each, without any improvement.

All patients that came under our observation went through the following routine:

1. Chest examination.

2. Blood examination for Wassermann and various serological tests.

3. Thorough study of the sinuses.

4. Dietitic and food anaphylactic tests of the proteid group.

In 1916 Dr. McKenzie of London claimed that ozena was a precursor of tuberculosis (regarding it as one of the group of para tuberculous diseases) basing his data upon the history of his patients who invariably showed that there was tuberculosis in the family. He also found an acid-fast organism which he claims is an attenuated form of tuberculosis. In only two smears have I found the acid-fast organism, but these were not completely acid resistent, for I was able to decolorize them with acid alcohol. I prepared a tuberculous antigen for complement fixation, controlling the sera of the patient with that of the blood of the tuberculous sera. I found that the ozena complement fixations were negative while the tuberculous sera were positive. We, therefore, cannot lay much stress upon the acid resisting organisms found because the crusts present in the nasal chambers are very good breeding places for the saprophytic organisms.

2. There were only two Wassermanns positive, and these belonged to the group of seven that did not respond to the vaccine.

3. All cases were transilluminated and all antra were punctured, but I noted that in ten patients I had difficulty in puncturing the antra. This led me to believe that probably this condition was due to some food dyscrasia resembling that of rickets, which is characterized by softening and absorption of bone and surrounding tissue with possible secondary eburnation. The following proteids were employed: Cow casein, egg, beef, mutton, pork, fish, oysters,

clams, crabs, wheat, oatmeal, rice, barley, tomato and strawberries. These proteids were kindly provided by Dr. Albert Strickler with whom I worked out various food anaphylactic tests in acute rhinitis, hypertrophic rhinitis, hay fever, asthma and ozena. In brief, the foods were prepared by extracting the protein by the use of a weak alkali, and after shaking and incubating the solution, it was filtered and absolute alcohol added, and the solution evaporated in a water bath. A saturated solution of this dry material was made in an alkalinized sodium chloride solution and the nitrogen content was determined by the Kjeldahl method. The endermic method of injecting the proteins was employed and one-tenth of a c.c. was used as a standard dose. The following constituted a positive reaction: 1. The lesion must persist for more than twenty-four hours, 2. The presence of a distinct papule, 3. The persistence of erythema, 4. Tenderness and induration at the point of injection. All ozena cases were negative.

The following antigens were prepared: 1. Polyvalent strains of our own isolated Friedlander's organisms. 2. Polyvalent commercial strains of the Friedlander's organisms. 3. Macerated ozenatous crusts. 4. Normal turbinates. 5. Hypertrophied turbinates. 6. Atrophic turbinates. 7. Ozenatous turbinates. 8. Tuberculous antigen. These antigens were properly prepared and carefully titrated.

It was most discouraging that this work should all be negative, for when I started I felt that something should be done whereby we could determine definitely whether ozena is due to some infection or is secondary to some general diathesis. Our findings from a serological point of view were negative, but I purposely reported these negative results so as to prevent others from pursuing experiments along the same lines and probably receive suggestions whereby I could correct my mistakes.

I wish to take this opportunity to thank Dr. John A. Kolmer for his assistance and material aid; also my chief, Major George M. Coates, for his kind encouragement, and for referring all ozenatous patients to us for experimentation.

1736 Pine Street.

CENTRAL DEAFNESS.

Dr. E. R. Carpenter,* El Paso, Texas.

Case report and discussion of an apparently hopeless lesion involving both auditory tracts in the upper pons,—recovery.

Mrs. W., age 23, American. Family history was negative.

She had typhoid fever at the age of fifteen and five attacks of pneumonia between the ages of eleven and sixteen. During the last seven years she experienced a great deal of trouble with indigestion and dizziness, and at times she was troubled with numbness of the left leg, arm and left side of the face.

Two and a half years ago, following tonsillitis, she developed an abscess in the left ear and probably infection of the right frontal sinus. The discharge from the left ear persisted about a month, but the hearing never returned to normal. She was treated some time later for catarrhal deafness.

About one year ago she developed severe headaches with intense pain in the ears at times and rapidly increasing deafness in both ears. The vertigo and stomach trouble became much worse. Nine months ago she was well nourished but intensely nervous. She had slight jerking of the muscles in both arms and neck, possibly more evident on the right side. Rhomberg test was positive and co-ordination was poor; she was markedly ataxic. Patellar reflex was overactive and the grip of the left hand was weaker than the right. There was a feeling of numbness and a loss of the pain and temperature sense over the left leg and arm, and the left side of the face. There was no aphasia. There was a slight Babinski on left side. Stereognosis was normal. No heminopsia was present.

Cranial Nerves:

First Nerve: There was a loss of smell on the right side.

Fifth Nerve: There was loss of sensation to pain and temperature on the left side of the face and the head. There was no sense of taste over the anterior two-thirds of the tongue. Left corneal reflex was absent. Left side of the soft palate was weaker than the right side.

Eighth Nerve: (1) *Auditory tests.*

*Capt. M. C., U. S. Army, Base Hospital, Camp Kearny, Cal.

The light reflex was normal for both drums, but there was a scar in the anterior part of the left drum. She had severe pain in each ear.

Right ear. Hearing, conversation was 2/40. Rinne, very short positive. Weber, not well lateralized. High and low tones in doubt.

Left ear. Hearing, conversation was 1/40. Rinne, very short positive. High and low tones uncertain.

Vestibular tests. (1) Revealed spontaneous nystagmus when she looked up or down, which made her very dizzy. Fell to the right.

(2) *Turning* reactions were almost normal with the exception of prolonged vertigo when turned to the left, head backward.

(3) *Caloric reactions.* Right ear. There was nystagmus from the vertical canal only when she looked to the left. Left ear—vertigo was greatly exaggerated and prolonged from the vertical canal. Patient was quickly nauseated and had severe hiccoughs.

(4) The patient past pointed to the right with each hand when the right ear was irrigated with the head 30 degrees forward; at all other attempts the arms made prolonged wild excursions in all directions as though she had no control of them.

Laboratory report—Wasserman and urine negative, spinal fluid and X-ray examinations not made.

After two months' treatment with mercury and iodides the patient was materially worse; she had several hard convulsions, projectile vomiting and a little later a blurring of the vision in both eyes from papillitis. She suddenly became entirely deaf in the left ear after a loud noise in her head. Weakness and twitching of the left facial mimic muscles developed. Temperature was normal.

At this stage, the last time I saw her, a diagnosis was made of tumor involving the pons and but little hope was offered from a subtemporal decompression. As nothing was done she was materially worse at the end of another month. After several hard convulsions paralysis of the left side of the face and left leg and increased numbness of the left arm came on. She was almost blind. Six weeks after the onset of the paralysis the left ear began to discharge pus and blood. After one week she was greatly improved and was soon herself again. Now, five months later, her physician informs me she is entirely well, that she has gained twenty-seven pounds, has no deafness, her sight is normal, there is no sign of paralysis or numbness, and that her stomach trouble and dizziness have disappeared.

Discussion. (1) Two points must be considered in the etiology of this case: (a) The typhoid fever at fifteen years of age and the numerous attacks of pneumonia between the ages of eleven and sixteen. (b) The occurrence of the abscess in the left ear two and one-half years ago.

That the otitis media was not the source of the brain infection seems evident from the fact that all her old troubles disappeared when the discharge occurred recently through the left ear. Yet, it is singular that the otitis media was on the left side, that the brain abscess formed on the left side, and that the pus burred its way through a healthy attic on the same side.

(2) Equally interesting were the bilateral pons symptoms. On the left side the fifth nerve, the vertical semicircular canal fibres and the auditory tract were implicated. On the right side the pyramidal tract (including the cortex facial fibres), the lemniscus and the auditory tract were involved.

The irregular nystagmus from the right vertical semicircular canal fibres, and the vertical nystagmus when looking up or down also indicated pons trouble. The exaggerated past pointing reaction in all directions on the left side suggest pressure irritation to the cerebro-cerebellar motor fibres in the pons.

(3) The extensive pons disturbance with such rapid and complete recovery as seen in this case could not have been from a primary abscess in the pons itself, but was from a left-sided basilar abscess, possibly a tempero-sphenoidal lobe abscess, pressing against the root of the left fifth nerve, with contra-lateral pressure of the right upper pons against the inner part of the posterior aspect of the petrous bone and attached tentorium.

Conclusions. (1) The lesion in nerve deafness should always be located.

(2) The vestibular reactions are of great value in the localization of intra-cranial lesions.

(3) Vestibular disturbance should always be considered in the etiology of obscure gastro-intestinal disease.

(4) More frequent recourse to well established surgical procedures will still further limit the number of hopeless intra-cranial diagnoses.

SPEECH ELEMENTS IN TABES: SIGN AND TREATMENT.

Dr. Walter B. Swift, Boston, and
Dr. Hugh Gibson Beatty, Columbus, Ohio.

The effect of tabes upon the voice is the last functional involvement due to this disease to be analyzed in detail and the last for which a treatment has been proposed. In cases of bulbar involvement, where the sensory nerve supply to the external organs of speech is interfered with, we get certain speech symptoms, some of which are definite and persistent, others varying from case to case. These vocal symptoms of tabes are among the first to show themselves, and it is therefore important that one should be able to recognize them. The definite characteristics are monotony of tone, slovenliness of pronunciation, and quick fatigue of the vocal apparatus. The cause appears to be a lack of co-ordination, due to paralysis of the sensory side of the speech mechanism.

The organs of speech may be divided into external, internal, and psychological. The external organs are the lungs, the facial cavities, the mouth and the nose. The internal organs are the brain and the nerves. The external organs of speech have both a sensory and a motor nerve supply. When we speak of the brain in relation to speech, we refer to an organ comprising the end nuclei of both the motor and the sensory nerves, together with the different areas connected with each other by association pathways. Both the sensory and the motor functions are provided with areas of two different sorts, one for the registration of impressions and one for the interpretation of this impression. These areas are intricately inter-connected by fibres with various other areas. This completes the mechanism of speech. To illustrate its working, let us suppose that the external sensory system brings in a certain impression and registers it in the low sensory area. The higher cortical areas over the low sensory intake areas then build up the concept and send it to another center for the registration of the potential motor idea. From here it is sent on to the motor area and is co-ordinated by the higher motor areas until finally it goes out over the motor nerves. When it reaches the external organs of speech we have the phonetic accomplishment of the mental process.

Obviously, this is a complicated process depending upon a com-

plicated and most delicately adjusted apparatus. When the working of the system is interfered with by the destruction of a path or an area or by the lack of co-ordination between two or more areas, the result is certain to show in speech. And it is clear that the wasting due to tabes may very frequently cause the destruction or the incapacitating of one or more of the very numerous centers and fibres necessary to the intricate processes of speech. The result may not be in direct proportion to the extent of the lesion. It may be chiefly the result of the location of that lesion. That is to say, some parts of the brain might be profoundly affected by tabes without causing any great speech difficulty.

When the symptoms are found, they are easily recognized. The tone is monotonous; sounds are omitted or muffled, chiefly the consonantal sounds; the oral organs, most of all the tongue and the lips, seems to be awkwardly controlled. The cause of all this is not a motor lesion but rather a sensory involvement resulting in a lack of muscular control, a lack of co-ordination entirely parallel with the ataxic gait.

Here, for example, is a case: began to have gastric crises, with hiccough, abdominal pains, and diarrhea. Had fifteen attacks of this sort in the first ten months. During this time began trouble with the voice, commencing as a mere weakness and increasing to aphonia. Could not even whisper normally but had to make a strong expulsion of air through the larynx. This vocal trouble began very early and was the first symptom of motor inco-ordination. Very soon after the voice signs appeared, the taxia in the lower extremities began. Some months later, it began in the arms. About this time, a system of exercises suggested by Dr. W. B. Swift was begun to see whether anything could be done to save his voice. Under these exercises, his voice has steadily improved until, at the present time, his voice has nearly the normal pitch and intensity. At times, especially when he has "gastric crises," about two or three times a year, he still has trouble with the voice, and also when he has been reading or speaking for half an hour or so. There is little or no defect in his pronunciation.

The Frenkel exercises for the ataxic gait are familiar enough. Dr. Swift's exercises for the restoration of speech in tabes are based upon the same principle. Of course an organic lesion destroying an entire brain area results in permanent cessation of function in that area. Occasionally, however, this disturbed function may be taken over by some other area. So it is that

the eye is made to help out in the Frenkel exercises. Instead of the eye, Dr. Swift uses the sense of hearing for the correction of speech defects. To quote from his paper read before the American Medico-Psychological Association in May, 1915: "The method consists (1) in eliciting the ear in place of the eye as Frenkel did; (2) in demanding the measured tread in enunciation; and (3) in initiating what I call a 'listening check-up repetition.'"

This treatment is as reasonable and as reliable as that of Frenkel, which has been so successfully applied for the alleviation of other symptoms of tabes. Perhaps it is too much to expect that it will restore perfectly normal speech, but it is certainly worth trying for a long time.

Woody Phlegmon of the Neck. THOMAS C. WORTHINGTON, *Southern Med. Jour.*, October, 1918.

Focal infection plays an important part in the causation of this disease. The importance of focal infection is also seen in the woody phlegmon following operative procedures and appendiceal inflammations in the lower abdomen. The staphylococcus, streptococcus, diplococcus, Loeffler bacillus and a pseudo-diphtheritic bacillus have been most frequently met with. The differentiation of woody phlegmon lies between cancer, tuberculosis and actinomycosis. But its firm and board-like feeling, the sense of resistance of the skin and underlying tissue, the clearly defined edges, the persistent flatness of the greatly thickened mass, its steady encroachment upon the surrounding tissue without much pain, present a picture which is distinctive of woody phlegmon of the neck. The treatment has been by incision and hot fomentations and in a few cases by vaccines. The combined treatment has given the best results. From the nature and extent of the tissues involved, incision cannot become a popular surgical procedure. Prognosis favorable. The author reports two cases, one fatal, the other with slow recovery.

ED.

NEGLIGENT SPEECH.

Mrs. May K. Scripture, New York.

The purity of our language is endangered partly because of our cosmopolitan population and partly because of an ever growing carelessness in speech of people in general. Again let us say that since slovenliness is intolerable in dress, in manners, in business, and in society it certainly should be in conversation.

In ordinary conversation *i*, *e*, and *u*, are recklessly interchanged; *t*, *d*, and *g* are jumped over in haste; and a general antipathy exists to the sounds of *r* and *h*, which are practically lost sounds in every day speech.

Negligence in speech may go so far that conversation is held in a generally slurred manner. The sounds, *p*, *b*, *t*, *d*, *k*, *g* are produced with the lips or tongue stopping the air pressure at different points. When the stoppage is released the air should come out with a slight puff or explosion. There is no explosion if the air pressure is allowed to fall before the release of the lips or tongue. This, in French, is the normal proceedure but in English it indicates negligence. Again, the *s* and other fricative sounds are often made too weakly; vowels are often slurred over too briefly, whole syllables are elided, and last words of a sentence are often lost altogether. Furthermore, there is a lack of uniformity throughout American speech in the sounds given to the vowels and diphthongs and in the accentuation of syllables in spite of the accepted rules for accentuation. Our climate is undoubtedly a handicap to a pleasing and effective speaking voice, for people with catarrh have trouble in keeping their voices mellow and their speech correct; however, the right use of the voice not only promotes better hygiene of the vocal tract, but tends to lessen the liability to catarrhal troubles. The American speaking voice could be materially aided by the training of children by better trained teachers in the elementary schools. A satisfactory course in voice training is required of teachers who seek appointment in the County Council Schools of London; thus more efficient work is assured not because the teachers are of better quality but because public sentiment enforces a higher standard in this subject. The training that a child gets in his earliest years will enable him to overcome any bad habits of speech he may be liable to acquire during adolescence. Care should be

taken to secure an unobtrusive balance between slovenliness and elocutionary exaggeration; teachers should strive for a clean-cut articulation in the children's reading and speaking exercises; poise, out of which quiet, varied and pleasant tones naturally proceed, should be taught all children; relaxation and abandon as a means of securing easy and beautiful tones are above all to be striven for.

The influence of home life and its enfolding habits, of course, has much to do with counteracting the attempts made at school in planting correct speech habits. If parents would make an effort to correct their own use of the mother tongue, all would be well with the child.

A thickness of speech often exists which, when not due to organic defects of the tongue, is in many cases the result of a childish habit of sucking the tongue, or the thumb, or other objects. The consonants *t, d, n, l, r,* are correctly formed by the point of the tongue acting against the upper gum; but in "thick" speech the tongue acts against the teeth, or the point rests on the lower teeth and the above elements are imperfectly formed by the surface of the tongue. This fault is unavoidable when the tongue is so tied to the bed of the jaw that the point cannot be raised. The more sharply the tongue can be pointed upward, the better will *t, d, n,* be formed. The tongue should never touch the lower teeth in speech, and it should never come between the teeth except for the single element, *th - dh,* and then to a very slight degree. In fact, *th* is best formed with the tongue behind, instead of between the teeth.

The breath as a controlling influence has so much to do with correct speech that we have deemed it necessary to devote a chapter exclusively to it in discussing the therapy for speech disorders.

Nasalization is another factor in the causes of negligent speech. When the soft palate is allowed to become sluggish in movement, when there is insufficient breath for forceful utterance, or when the three nasal sounds (*m, n, ng*) are not carefully enunciated when followed by consonants or when they are not separated from the vowels, the nasal twang is unavoidable. Unless such phrases as "Aren't you coming?" or "I don't want to" are distinctly spoken, letter for letter, negligent speech is the result. Again in such words as "can" where the vowel is followed by the nasal consonant, care is to be taken that the *a* sound does not go through the nose with the *n* sound.

To correct this particular negligence there must be first, constant practice of isolated vowels:

1. closed vowels (food) (good) (Queen) (lip).
2. half closed (low) (November) (red).
3. half open (there) (bird) (above) (much).
4. open (long) (saw) (cap) (cow) (fly) (father) and second on easy words containing the nasal sounds:

many	mice	now
me	no	noise
my	not	ring
man	nut	sing
more	nothing	bring

and third on the sounds of such words as can, in the following manner:

c - - - - - a - - - - - n
c - - - - a - - - - n
c - - - a - - - n
c - - a - - n
c - a - n
c a n

Conversational speech is in general very slovenly. There is:

1. Lisping and dropping of the tongue.
2. Confusion of aspirates with vocals.
   Aspirates: t, p, k, f, s, sh, th, hew, he.
   Vocals: d, b, g, v, z, sh, dl, w, y.
3. Lack of vibration in vocal consonants.
4. Omission of consonants.
5. Ugly projection of the lips.
6. And of the tongue in *th*.
7. Laxity of *F* and *V*.
8. Flatness of *W*.
9. Negligent *R*.
10. Excess of aspiration in *T, P. K.*

If it could be written down exactly as heard, the speaker would not recognize his own intelligible jargon. This statement is not at all exaggerated when one stops for a moment and thinks of the kind of utterance that passes current in social life. The chief element of distinct audibility-voice is so curtailed and slurred out, that little more than mouth actions remain. If the oft repeated axioms "Lengtthen and strengthen the vowels" "look out for the vowels and the consonants will take care of themselves" and "speak slowly and distinctly" were carried out, negligent speech would not be so prevalent.

A great variety of the minor defects in negligent speech arise from the substitution of one part for another of the oral organs,

for the correction of which elementary power must first be gained and the following steps in exercises be pursued:

1. Pronounce the element separately again and again, until it becomes easy of formation.

2. Practice its combination with a single vowel, and continue this form of exercise until rapid reiteration becomes easy.

3. Practice separately all the consonant combinations into which the element enters.

4. Pronounce words or sentences containing the element—repeating each quickly.

5. Introduce the correct element in reading, by slightly holding or prolonging it at each recurrence, until the habit is formed of articulating it correctly without special effort.

A tabulation of the actual errors in every-day speech falls into groups such as the following:

(1) Mispronunciation of prepositions: *of* (ov) not u; days *of* danger (not daza danger); *to* (too) not tu; to-day, to school, to rest.

(2) Words in which *i* is often pronounced *u*: firm (ferm) not furm, girl (gerl) not gurrl, first (ferst) not furst.

(3) Words in which *i* is carelessly enunciated: habit (not habet), victim (not victum), Phillip (not Phillup).

(4) Every-day words often mispronounced: roof (not ruf), catch (not ketch), lion (not line).

(5) Words in which *u* is frequently pronounced oo when u=e—oo=you after *t, d, n, k, l*: stupid, acute, multitude. To sound *u* in such words as *use* or *mule* is easy enough but after the consonants *t, d, l, n* many careless speakers pronounce it like *oo*: duty (dyouty, not dooty), tulip (tyoulip, not toolip), new (nyou, not noo).

(6) Neglect to sound *u* as in full: truthful (not truthfl), wasteful, beautiful.

(7) Mispronunciation of *ow* (*o* not *uh*): yellow (not yelluh), mellow, follow.

(8) Carelessness in grammer: lie for lay, has for have, saw and seen, did and done.

(9) Carelessness in suppressing syllables: slippery, cruel.

(10) Defects in *n* and *ng*; the last sound in the following words should be prolonged so that it will sound like a bell: sing, ring, dong, bang, good-morning, good-evening.

The sound *n*, namely, the nasal with the forward contact of the tongue, is sometimes used for *ng*, the nasal with the rear contact, as in good-mornin' instead of good-morning, meetin' for meeting, eaten for eating, etc. The confusion is aided by the lack of any English letter for the sound *ng*. The correction is made by calling the patient's attention to the differences and by making him open his mouth widely while making the *ng* sound in such words as sing, bring, ring, calling, etc. The *ng* in words like *finger* consists of two sounds, *n* and *g*, and not of the single sound *ng*.

(11) Words containing *wh* are often pronounced too weakly: For *wh* practice blowing out on the finger and pronounce: wharf, whine, why, when, whine, whether, where, whither, whittle, what, which, whew, whistle, wheat, while. *Wh* is to *w* what *f* is to *v* or *s* to *z*—the non-vocal form.

(12) Words in which *e* is often pronounced *i* or *u*: gladness (not gladnis), kindness, business, children, parent, hundred, permit (not purmit).

(13) Omission of the final letter in words ending in *d* or *t*: found, drowned, wept, kept.

(14) Words in which *d* and *t* occur in the middle are often carelessly spoken: boldly, handsome, swiftly, exactly, breadth.

(15) Slurring of word combinations: one and all, round and full, black and white, almost ready, just show them.

(16) Mispronunciation of *have*: would have done it, might have seen it (not might a seen it), shall have found it.

(17) Careless enunciation of the ending *st*: most, best, proudest.

(18) Mispronunciation of *than* as *then* or *n*: more than (not moreun), rather than (not rathern).

(19) Mispronunciation of *a*, as in Sunday (not Sundey), Monday (not Mondey).

(20) Mispronunciation of words ending in *a* or *aw* as if spelled with an *r*: law (not lawr), paw, saw, veranda.

Defects of R and L. The original sound from which English derives its *r* as in run, was the rolled or trilled *r*. The rolled *r*, which is no longer used in English, is the only one in German, Italian, and most other languages. To produce the rolled *r* with the point of the tongue, its front portion is pressed against the palate tightly except at the point. The pressure of the breath causes the point to flap.

In the English *r* the tongue position is the same, but the point is just held away from the palate; there is no flapping or rolling. In large cities like Berlin and Paris regularly in Yiddish, the rolled

r is pronounced by forming a groove in the rear of the tongue in which the uvula is at rest. The breath causes the uvula to vibrate. If the American who articulates the consonant *r* so peculiarly would slowly and carefully enunciate the words bar and barn while holding the tip of the tongue down behind the lower front teeth, instead of allowing it to trill he will find the cause and the remedy of his violation of one of the laws of speech. Shakespeare told his players that all the faults of speech are to be found and corrected on the tongue.

For *l* the tongue is tight in front and open along the sides. The most common defect in English is the use of the easy sound *w* for the difficult sound *r*. The cure consists in getting the tongue in the right place for *r*. One method is to teach the rolled *r*; the rolling is to be done with the tip of the tongue. When the patient can talk with the rolled *r* he simply drops the roll while using the position. When the patient can not get the tongue right for the rolled *r* it is useful to use another sound that requires the point of the tongue against the palate. For example: sun, run, sun, etc.; tun, run, tun, etc.

In more difficult cases the patient observes the tongue of another person saying *r*. He finds that it touches the teeth along the sides, but it is freer and looser in front. This is particularly clear when the *r* is rolled. With a mirror he tries to get the same position.

L for *R*. Sometimes *l* is used for *r*. It is like the Mongolian lisp used by the Chinaman, who says, "Melican man here light away." The patient is shown that for *l* the tongue is open along the sides while tight at the tip. The action is thus the reverse of that for *r*. For the correction of this obstinate defect the tongue is drawn back into the mouth so that it cannot be released at the sides; the point is turned up. A flat stick or a small rod (aluminum applicator) may be put under the tongue to push it back and up.

Children of foreign born parents sometimes use the uvula *r* instead of the smooth English *r*. It is usually sufficient to teach the difference between the rolled *r* and the English *r*.

W for *R*. The *r* may be omitted or replaced by other sounds. The use of *w* for *r* is very frequent. The child is sometimes encouraged to say vewy, pwetty, etc., because it sounds "cute." Both tongue and lips take the position for *r*.

These defects are to be cured by teaching the patient to make exaggerated or rolled r's. Words are recited with exaggerated r's, rolled and not rolled. The lower lip may be held down to hinder the *w* movement.

R for *L*. The usual defect of *l* consists in the use of *r* or in dropping the *l*. In both cases the cure consists in imitation or in explanation with observation of the tongue. In order to enforce the fact that the tongue must touch at the tip for *l* it is useful to touch the tongue at the back and then throw the tip sharply into place against the palate as an initial *l* is to be pronounced.

Defects of *Ch* and *J*. The sounds *ch* and *j* as in church and judge, have been considered as consonantal diphthongs, each made up of two sounds, *t* with *sh* and *d* with *sh*. Graphic records of the sounds ch and j have proven that they are two independent sounds. ("The Sounds of CH and J." Winifred Scripture.) A record of the word Mitchel shows the sound *ch*—spelled *tch* here—to be an occlusion followed by an explosion of a special form that is never seen in any other typical sound. A record of the word nutshell shows an occlusion for the *t* without any explosion, followed by a long rush of air for the *sh*. The sound *ch* (c) is thus quite different from the combination of sounds *tsh* (t).

The difference between the two sounds can be shown in another way. A palatogram for *ch* or *j* shows that the tongue touches the palate slightly farther back than for *t* or *d*, and that it covers a bigger space.

The front of the tongue touches the palate rather far back; the lips are somewhat protruded. The differences from *t, d,* are marked.

The establishment of the fact that *ch* and *j* are individual sounds or in other words, that they are simple occlusions with characteristic explosions, is analogous to the proof furnished long ago that the two forms of *sh* are individual sounds and not compounds of *sh* and *h*.

The typical defects in the use of these sounds are of two kinds. On one the tongue presses too tightly against the palate, in a way similar to that for an occluded S. The sound is like a t for ch and a d for j. In the other the tongue is not pressed tightly enough. This produces a sound resembling sh. The treatment for the former is similar to that for the occluded s, the purpose being to obtain relaxation of the tongue. For the latter the patient is told to press the tongue more strongly.

The correction of a foreign accent is so closely allied to the principles suggested for correcting negligent speech that a few further words will suffice to show what may be done for the foreign-born child who is confronted with the task of learning to speak English. Children of Teptonic origin must be taught the correct use of the

tongue in producing English sounds, for in our language the tongue is far more accurate than in German and the mouth less. English speaking races use their tongue quite differently from Germans when producing the rounded and unrounded vowels. The German tendency to sound every final *e* and to make all vowels long when attempting to speak English proclaims at once his ancestry. The constant use of tongue gymnastics and vowel drills, with exercises on inflection for correcting accent, should be daily habits for the aid of the foreign child.

The Russian child is peculiarly handicapped in learning English without an accent because the Russian has many useless letters which leads him to think that many of our consonants are without value also. He has no letter for *w* or *i*, and *l* in the middle of a word is silent. Russians also find much difficulty in producing our *h* both because of their peculiarly gutteral explosion of breath and the fact that *h* in their language is sounded like our *n*. The Russian also introduces into English a reflex habit in adding hard or soft sounds after words, which is a characteristic of their native speech. On account of the very gutteral speech of the Russian he does not use his mouth correctly for our vowels and his English is nearly always spoken from between his teeth.

The Russian jew's speech is also gutteral with the addition of nasality and a rising inflection at the end of emphasis words, phrases and sentences. The Jewish child of Russian origin finds much difficulty with the English vowels, giving them wrong values and often showing a tendency to shorten them. The correction of these faults lies in the correct formation of all English elements with much stress laid upon vocal gymnastics.

The children of Helenic origin have a tendency to place all sounds very far forward in the mouth; they experience great difficulty with final consonants and showing a tendency to slur them, this being especially noticed in the posterior palatal sounds *k, g, ng*. The tendency to prolong their vowels, although quite different from the German who opens his mouth so fully, is shown in his pronunciation of policeman as po-o-oleeceman. Our short vowels are also a source of trouble to the Greek who translates our pronunciation of it into eet. Although the Greek's articulation of English sounds is similar to that of the Latin races he even speaks our language faster than they.

Italians and Spaniards have a characteristic drawl. There is in their speaking English an elision of syllables and consequent slurring with final consonants apt to be slurred or entirely omitted.

They also have difficulty on our diphthongs, *ou* or *ow* and *ai*; they are apt to treat our *c* before *e* or *i* as *ch* and our *z* as *th*. Like the Greek the Italian lengthens the English vowels, especially the short ones. Spaniards have difficulty in the production of *sk* or *st* when final. In general they protrude the tongue too far forward on lingual palatal sounds, thus producing such sounds lingua-dentally with a lisping effect.

French children retain a slight nasal accent when speaking English, due to a difference in the production of the vowel sounds in their own language. Diligent practice upon vocal gymnastics and careful guidance in producing all English sounds correctly will aid in eradicating the faults of foreign accent.

In conclusion, we might call attention to the five evidences of an education that President Butler of Columbia University gives, where he lays stress in the very first one upon the importance of correct speech. These are:

1. Correctness and precision in the use of the mother-tongue.
2. Those refined and gentle manners which are the expression of fixed habits of thought and action.
3. The power and habit of reflection.
4. The power of intellectual growth.
5. Efficiency—the power to do.

Dr. John W. Davis, Department of Education, New York City, in a monograph entitled "Should Phonics Be Taught In Our Schools?" writes:

"On October 16, 1913, there was produced in Vienna at the Hofburg theater, George Bernard Shaw's Pygmalion. So great a success was it that it moved thence to Berlin, and report says of it that it proved to be the most popular success that had obtained in Germany for some time.

On October 12, 1914, Pygmalion opened in New York City, where, by the time this pamphlet reaches the reader, it has undoubtedly been seen, thoroughly enjoyed, and appreciated by most of the New York City school teachers.

Why the premiere of this play was not given in London is one story—one which does not interest us here. The other story—the reason for its being—does interest us. Phonics is the reason, as the following extract from the New York Times will show:

Pygmalion is the story of a professor who makes a Duchess out of a little Cockney flower girl simply by careful attention to her vowels and consonants, the assumption being that not what we do but what we say makes us what we are and establishes our rank in society. And not only does Mr. Shaw's Galatea, whom he calls Eliza Doolittle, change outwardly but she develops a soul—something which the professor had not counted upon.

Eliza makes her first appearance among a little knot of people who, late one summer evening, have gathered under the porch in Covent Garden to escape a driving rain. The suspicions of the crowd in general and in particular of Eliza, selling flowers, have been aroused by a mysterious person who stands in the background and takes notes on the conversation. The fact that the mysterious person, who is Henry

Higgins, hero of the play, can tell what district each one of the company hails from, increases the mystery until he explains that phonetics is his vocation—a fact which makes little impression on Eliza except to assure her he is not a detective.

Higgins—The science of speech—that is my business. It is also my hobby. Fortunate the man who can live by his hobby! You can recognize a Scotchman or an Irishman by his accent easily enough. I can ascertain within eight kilometers the place from which a person comes. If he is from London, I can fix the place of his birth within three kilometers—in fact I can often guess the very street.

Eliza—'E oughter be ashamed of 'imself, the snivellin' coward!

A Man—But can one live on that?

Higgins—Oh, yes, very well, indeed, in this age of parvenus! People start in Kent with eighty pounds a year and end in Park Lane with a hundred thousand. They want to forget Kent, but as soon as they open their mouths they betray themselves. Now I educate—

Eliza—'e oughter mind 'is own bizness and let a poor goil—

Higgins (bursting out)—Woman, stop this fearful racket for one minute or find another church to stand under.

Eliza (weakly defiant)—I c'n stand 'ere just as good as you if I want to.

Higgins—Any female that projects into the atmosphere such horrible and disgusting tones has no right to be anywhere—has no right to exist! Remember that you are a human being with a soul and with the God-given gift of articulate speech; that your mother tongue is the tongue of Shakespeare and Milton and the Bible, and don't cackle like a barnyard."

Not long ago a professor in Yale University bewailed the fact that only a remote and solitary few of the students habitually consulted a dictionary of the English tongue. He demonstrated by examples that most of those who came under his observation as interesting types of their curious species did not know the meanings of common words. This is beyond dispute. But this excellent professor—would there were thousands more of his type!—might have gone much further and said that, not only did his pupils speak the language without knowledge of its meanings, but that they also spoke ungrammatically, unidiomatically, and without even a cognizable approach to correctness in pronunciation.

There is perhaps no other country in the world in which the language of the people is so badly spoken by the people as it is in this. In Germany, barring those parts where dialects are heard, the language is better spoken even by the servants than it is here by the ordinary people one meets every day.

The reader has only to listen to the conversations which go on around him wherever he may chance to be. In the street car, in the elevator, in the high-priced restaurant, in the drawing room car, in the theater, in the opera house—it is always the same. One hears the English language spoken in such a way as to make it almost unintelligible. It is not only the emotional shop girl who, having gone to a "movie" show, exclaims to her sister, "Mame, it was just gray-und!"

The root of the trouble lies in the radically incorrect pronunciation of the language. Singers are not a privilege class in language; they do not speak English better than the people who sit "in front" and applaud them. Most of them speak it very badly, even when their grammar is impeccable. They learned to speak it badly when they were at school, and in ninety-nine cases out of a hundred there was no one to teach them to speak it better.

"Oh, Ah lak that!" So exclaimed a charming young woman who sat behind the writer at a concert. What she intended to say was, "Oh, I like that!" What she actually said was that written above. Now she would probably have been amazed if anyone had told her that she pronounced such simple words incorrectly. But she was no worse than the vast majority of the people you meet. How would you say the clause which has just been written? "B't she uz no wors'n the vass majorutti'th'people yeh meet."

David Belasco recently said that, in the Dramatic School to be inaugurated in New York, in order to make the pupils able to pronounce and enunciate properly and clearly, one of the faculty is to be a teacher of English—just plain English—pronunciation and enunciation.

"Further," he said, "the one city of the world where improper pronunciation, and imperfect enunciation are the rule rather than the exception is New York—for which the United States suffers."

Fifteen years ago, or more, Alexander Melville Bell said:

The rarest quality among all classes of speakers is the clear and intelligible delivery of words. That which ought to be characteristic of every educated person, we look for, almost in vain, among the majority of the most highly educated. Instead of sonorously vocalizing, crisply articulating and speaking out to their hearers, they mutter and mumble and speak to themselves. The fundamental fault is the absence of phonetic syllabication. Syllables and words run together so that the closest attention is required to enable the hearer to gather the sense. Instead of this, we ought to be able to catch the speaker's every syllable. The difficulty is that the speaker must utter syllables before an auditor can catch them.

Common sense would seem to be enough to preserve speakers from such errors, but the subjects of them are simply unconscious of their failings. The blame for this goes back to the public school, where no training in articulation and in vocalization has been afforded to the pupils. To the schools we must look for amendment in the future. Teach the young to speak intelligently, to speak out, and to pronounce the words distinctly, and the formation of such habits as now detract from effectiveness will be rendered impossible.

55 Central Park, West.

RATIONAL TONSIL SURGERY.

Dr. W. W. Sauer, Marietta, Ohio.

So many papers have appeared on the subject of diseased faucial tonsils and their surgical treatment, that one approaches the task of writing another with trepidation. Still, as long as there are any tonsils left, and as long as they appear to be the means of causing distress to the human organism, just so long will the conscientious surgeon remove them.

Indications for Operation. For my own part and in defense of thousands of other throat surgeons, I would state that the decision to operate or not to operate is controlled by one's own conscience as dictated by the symptoms produced by the pathologic conditions the patient exhibits, locally and constitutionally. There can be no doubt that many individuals have improved in health, their symptoms have been relieved, and their metabolism built up after careful tonsil enucleation, and hence in spite of the feeling that some have, that too many tonsils are removed, I can see no reason for refusing to do the right thing when we have carefully examined the case, and decided that surgery affords the only means of cure.

I have refused to operate on many throats when I have thought the symptoms did not justify removal of the tonsils, and on the other hand I do not hesitate to operate when convinced that the tonsil is the disturbing element.

Tonsillectomy a Major Operation. Tonsillectomy when properly done and all the details rightly carried out, must be considered a major surgical procedure, and is entitled to as much respect as any other so-called major operation—*i. e.,* it should be done in a well equipped hospital, under complete ether anesthesia, surrounded by trained nurses, assistant, expert anesthetist and operating room facilities, and by which every method of technic that appeals to the surgeon. If the patient is an adult I always give morphin 1-6 scopolomin 1-200 one-half hour before the operation (never to children). The anesthetic may be given to the patient in bed, on the carriage, or on the table, as the operator selects. The most favorable position for the patient is on his back and head slightly lower than the body. The surgeon takes his stand on the patient's left. Urinalysis, blood-pressure, temperature, and history as to hemophilia have previously been taken, and alimentary tract evacuated.

Steps in the Operation. First, the Jansen mouth-gag is inserted with the handles pointing toward the patient's right ear and opened widely enough to give good view of the pharynx and tonsil regions. The patient's face is turned slightly toward the operator who, as

above stated, stands on the left side of the patient. The throat is then mopped out to remove any mucus or tonsil secretion.

Second, the Beck-Schenck snare is grasped in the left hand, and while the tongue is controlled with the depressor in the right, the fenestrum of the snare is placed back of the left (or lower) tonsil and brought forward, causing the tonsil to ride up on the plane of the guarded snare wire. The handle of the snare is lowered somewhat and presses against the right angle of the mouth, and at the same time the instrument is pushed downward and forward. The tonsil can be seen as a tumor mass covered with the anterior pillar, bulging over the fenestrum of the snare. The important detail in order to thus engage the tonsil is to be sure that the fenestrum goes back far enough, even to the posterior wall of the pharynx before bringing it forward so as to get securely back of the tonsil. This will be found to be especially difficult when you have the small, fibrous and "submerged" variety to deal with. In any case, the round, tumor-like mass must be seen riding on top of the distal end of the snare, and overlying the fenestrum before the next step is undertaken.

Third, the tongue depressor is removed and with the light directed on the field (do not rely on the sense of touch), the tip end of the index finger of the right hand is placed firmly on the bulging anterior pillar and the mass is pushed through the fenestrum, taking care to hold the snare steadily, wavering neither to the right nor left, forward nor backward. When the finger feels that the tonsil is through the opening in the snare, or rather feels the depression made by the tonsil being through the snare, the upper and lower parts of the tonsil are pushed through the same hole by shifting the pressure from above downward, also from below upward, taking care not to relax the finger from the spot of pressure. The thumb of the right hand then is brought into use, unlocking the snare (this can be done if preferred with the third or fourth fingers of the left hand), thus releasing the wire loop which is firmly brought down behind the tonsil mass and engages its neck, as it were, within its loop. The instrument is now re-locked and then the finger should be released from the pressure, and not before.

Fourth, the tongue depressor is taken in the left hand, the assistant holding the snare gently, avoiding any traction, and with a pair of Alli's tissue forceps in the right hand, the tonsil is grasped to secure it and prevent its falling back into the larynx after it is snared off. The tongue depressor is now removed and by turning the handle of the snare the tonsil is *slowly* ecrased.

Fifth, as soon as the tonsil is out pressure is applied to the fossa, by means of a gauze sponge, either on the end of a sponge holder, hemostat or finger, and kept there until the tonsil specimen is inspected to see if its capsule is intact, and also that there are no muscle fibres included, etc. There usually is some oozing of blood from the posterior pillar about three-fourths of the way down, coming from the ascending tonsillar branch of the pharyngeal, but this is venous and in children can be stopped by pressure. In adults the bleeding point requires clamping with a small-nosed, curved hemostat with long handles. This clamping in 90 per cent of the cases stops the bleeding. I have never yet had to ligate the bleeding vessel in a tonsil operation, and I always stop all oozing from the left before beginning on the right tonsil. This is a little detail that must not be overlooked. When I am satisfied that the fossa is clean and dry I approach the right or upper tonsil the same way as the first one. The snare, however, is shifted to the right hand and tongue depressor to the left, the patient's face directed nearly straight up toward the ceiling. The index finger of the left hand pushes the right tonsil through the snare and the left thumb releases the lock on the snare, while the right hand grasps the engaged tonsil with the tissue or vulsellum forceps.

The oozing from this tonsil is usually less, and I think for the following reason, viz: when the ring on the end of the handle of the snare is turned to ecrase the right tonsil the tissues are in their normal position, because the handle is nearly vertical, whereas in removing the left tonsil the handle is likely to be depressed or pushed to the right, thus causing a pull on the muscle-pillars and vessels of the tonsil. This can easily be obviated by using the left hand to ecrase the left tonsil and at the same time avoid awkwardness.

Sixth, 25 percent solution of iodin is gently swabbed in the fossae, to act as an antiseptic and styptic.

I do not claim anything original for this method, as I learned it from Dr. J. C. Beck, who has done it for years, but I do say that in my hands there never has been anything more satisfactory than this method for complete enucleation of the tonsil with its capsule.

Critical Remarks. I have talked to many men who still use the dissection method and claim for it a bloodless operation. In fact I recently read an article in the December (1916) LARYNGOSCOPE on the subject of "A Bloodless Method of Tonsil Surgery." I was amazed to note that the writer referred to the dissection method. How can anyone (unless he blanch the throat with objectionable amounts of strong solutions of adrenalin) cut, along the pillars and around the capsule of the tonsil, and not get bleeding?

We all know a cut vessel bleeds, but if it is slowly snared off the ends of the vessels are vastly more apt to cohere than if they are torn through with blunt dissection or cut through cleanly with a sharp knife. I question if there is such a thing as a bloodless tonsil operation. I do know that I removed a pair of small fibrous submerged tonsils in a young adult, with the loss of such a small amount of blood that only two small square sponges were used and they were scarcely stained. I should say that probably eight or ten drops of blood were lost. That is as near bloodless as I have ever done one.

The element of time should not be considered. It is vastly more important to do the operation thoroughly and take a few minutes longer, than to work against time and send the patient back to bed with the tonsil and adenoid region bleeding. I have enucleated tonsils in seven minutes' time, from the first to the last move, but usually the time required is twenty to twenty-five minutes, but when the patient goes off the table I am convinced that the throat is dry, and I do not anticipate coming back for the purpose of stopping hemorrhage. There is hardly any after-care required, the most important measures are a castor oil purge twenty-four hours after operation, and a normal saline mouth wash used frequently, liquid diet for three days, and rest.

I have found that if the patient's bowels do not move for twenty-four, thirty-six or forty-eight hours after the operation, temperature will develop (it may go to 105°). This I believe is due to the retained and disorganized blood, swallowed during the operation, so I caution the patients on this point particularly.

One great advantage of the method of operation I have described is that the anterior and posterior pillars are left intact. There is no cicatrix resulting which will pull up and draw on the laryngeal muscles and cause a disturbance to the vocal cords. This is an important matter to every patient. Singers are loath to submit to tonsillectomy on account of the fear of resultant injury to their voices. Many laryngologists, too, advise against the operation for that reason, but my experience is that if the voice has been affected at all by the operation it is improved. Of course we would not expect one to resume his usual singing engagements for some weeks afterward, for the same reason that we would not expect one to wear an artificial eye after enucleation for six or eight weeks, or for one to wear an artificial leg for the same length of time. It requires practice and training to place the voice in its new surroundings and gradually attain the desired excellency and timbre.

42-44 St. Clair Building.

SOCIETY PROCEEDINGS

AMERICAN LARYNGOLOGICAL ASSOCIATION

Continued

The Diagnosis and Prognosis of Hypertrophic Sphenoiditis. GREENFIELD SLUDER, M. D., St. Louis.

Of the utmost importance is the kind of light to be used in postnasal examinations. Sunlight would be ideal were it not for the great heat conveyed which renders it useless.

The light made by Leitz under the name of the "Lilliput Arc Lamp" is as satisfactory as the sun and always available. The carbons meet at right angles and give a brilliant white light which is condensed into a pencil by a convex lens. It is a different light from that of the arc lamp used in street illumination. In burning, a little white smoke is given off, which condenses to a white powder, indicating that the carbons have been impregnated with a zinc salt which may be the way in which the white light is made. Leitz declines to tell the process of manufacture.

The advantage of a proper light are obvious, in that diseased conditions, as also the presence of a small amount of pus, are the more readily recognized. At times the Holmes nasopharyngoscope is of the utmost help by virtue of the right angle vision.

The author presents a clear description of the normal post-ethmoid-sphenoid district.

All changes in these parts should be carefully noticed, because a very slight surface change is often accompanied by much more advanced and serious change in the deeper parts, as is often shown by the finding of polyps within the cells at the time of operation, no evidence of which was previously recognized there. Patches of inflammation may often be found with the pharyngoscope within the cells which are very pernicious and disastrous according to their location, for example, upon the optic canal.

He does not believe that the postethmoid sphenoid operation is free of danger in the hands of any rhinologist. He has seen the eye, which it was intended to save, lost for the vision it had at the time of operation, and he had learned of death following a number of these operations. Sometimes a sphenoid sinus makes the inner part of the canal, and sometimes the postethmoid makes it, and there is no way to tell in a patient at the time of operation which it is, hence the sure practice is to do the combined operation.

The distribution of the hyperplastic process here is of great interest and various.

The presence of pus is not the only indication of diseased conditions here, as there may be active inflammatory conditions without it. The author calls attention to the appearance of the epithelium under different conditions. With a proper light, when pus is present it is almost invariably greenish yellow or yellowish green, whereas opaque epithelium is white or very slightly bluish white.

This form of sphenoiditis is rarely unilateral. Anomalous anatomic arrangements of these parts exist, and failure to bear these possibilities in mind may defeat our best technical efforts, and these anomalies are described. The diagnosis becomes exceedingly difficult in children.

As to prognosis, the infection "coryza" in these parts may be of grades so slight that the patient is not cognizant of it and still make the ocular or the painful lesions. The acutely inflamed area may, however, be seen with the pharyngoscope after the cells are opened. And for the

second class of cases the prognosis is also for relief, but it must needs be slower and less complete, although in the long run the result is pre-eminently worth the effort it took to get it. These cases have seemed to be less disturbed by coryzas.

The postethmoid sphenoid radical operation, properly performed in the first class of cases, almost always gives a technical result that remains satisfactory—that is, the openings of the cells remain as the operator makes them. In the second class they almost always get smaller, and very frequently close up completely, and so must be made again, often several times.

In later life an involution of the hyperplastic changes—rarefying ostitis—takes place. Sometimes beginning about the fiftieth year and sometimes later. The author has seen this in unoperated cases accompanied by corresponding cessation of symptoms (in one case an ophthalmic migrain).

The Value of the Dichloramin-T Chlorcosane Solution (Dakin-Dunham) in the Treatment of Infections of the Upper Air Passages. D. Bryson Delavan, M. D., New York.

Dichloramin-T, the basis of the Dakin-Carrel fluid so extensively used as an antiseptic in a wide variety of infectious conditions, has an intense germicidal action corresponding to its high content of chlorin. It is difficult to find for it perfectly satisfactory solvents which will yield stable solutions. Drs. Dakin and Dunham state that the best medium thus far found is an oil obtained by the chlorination of paraffin wax, to which has been given the name "chlorcosane." Other solvents experimented with are a mixture of eucalyptol and paraffin oil, and a heavy oil obtained by the chlorination of eucalyptol. Eucalyptol has been found to be irritating. Chlorcosane is not irritating and has seemed decidedly preferable. Explaining the action of dichloramin-T in oil, Dr. Dakin says that antiseptics incorporated with or dissolved in oily substances usually possess little if any antiseptic activity because intimate contact with the infected matter is hindered by the oil. When, however, the dichloramin-T solution in chlorcosane are brought in contact with aqueous media the partition coefficient between the oil and the water is such that a certain amount of the dichloramin-T passes into the water and there exerts its germicidal action. The amount of the dichloramin-T thus passing from the oil is increased by the presence in the aqueous medium by substances capable of taking up chlorin. So that the oil solution seems as a store for the antiseptic which is drawn upon to maintain the germicidal activity of the aqueous medium with which it is in contact. The dichloramin-T oil solution may be sprayed upon wound surfaces or poured into accessible parts of deep wounds. It yields moderate amounts of the antiseptic to watery media, such as secretions from wounds or mucous membranes. It is suitable for sores requiring prolonged antiseptic treatment and for first dressings of wounds which do not require irrigation. The application of the oil is extremely simple, and generally it need not be renewed more than once in twenty-four hours.

Admitting the germicidal power of dichloramin-T, it is desirable to study its value in the disinfection of septic conditions of the upper air passages, regions especially liable to infection, prone to harbor germs of dangerous character, abounding in recesses difficult of access by the ordinary means of application, and often becoming foci of infection threatening extreme danger. This is especially true of the upper nasal region, the vault of the pharynx and the tonsils. The dichloramin-T may be used to advantage in these regions under the three different conditions:

1. To prevent the extension of newly acquired infection.
2. To overcome the acute results of infections, and
3. To abolish the bacilli persisting in carriers.

The success of the method must depend upon the thoroughness of the application of the disinfectant. Brushing the surface of the tonsil or spraying the lower section of the nasal cavity cannot possibly be effective.

A spray atomizer must be used which will carry the spray in all directions, upward, downward and sidewise.

The crypts of the tonsil must be disinfected to their lowest depths, and the superior half of the nasal cavities must be thoroughly reached. To effect this the following principle must be recognized and carried out: The parts must first be cleansed, and then exposed to the fullest extent by the application of adrenalin or some similar astringent, and finally the dichloramin-T oil sprayed into them until every crypt and recess has been completely reached. This thoroughness is absolutely necessary in order to secure the removal of the most deeply seated germs.

Used in the strength of two per cent or less, the solution with chlorcosane is not irritating, although stronger solutions may be. Suitable atomizers are necessary. The success of this method has thus far been gratifying.

Where this method fails, in the presence of hypertrophied tonsils or adenoids, the removal of the latter may be necessary to effect a final cure.

The desire of the author is to furnish a method so simple in itself as to be readily carried out by the average practitioner, with the aid of apparatus inexpensive, durable, clean, compact of form, light of weight and therefore available for use under all circumstances of medical practice, whether civil or military.

The essentials to success are:

1. Recognition of the principle of the necessity for the complete exposure of the centers of infection.
2. The use of a proper spray atomizer.
3. The devotion of sufficient time and care to the effective carrying out of the treatment.

DISCUSSION.

DR. JOSEPH H. BRYON, Washington: I believe that this method of treatment is going to be of valuable assistance to us in correcting these conditions. I cannot understand how the spray can get into the deeper portions of the tonsils, however. I have been using a small dental syringe, by which the solution can be carried into the depths of the tonsil better than by the spray.

DR. ROBERT C. MYLES, New York City: I have been experimenting for several months with these preparations of Dr. Dakin's fluid, although nothing definite has resulted. A great many of the cases seemed to have been relieved, and it would seem theoretically that it is the best thing that has been proposed. I have used it in solutions and mixtures, and the difficulties in reaching the depths of the crypts need, I might say, some consideration. Many of us have been trying to swab out the depths of the crypts and have always produced a certain amount of hemorrhage on account of the delicate structure of the parts, leaving a blood clot to be a culture medium for the germs. I have used also the watery solutions in tracheobronchial conditions, and so far the results have been very satisfactory. I do not believe that I have a case which apparently was pneumonic that has not stopped. When the oily solutions were used a great deal of precaution was observed in dropping them into the trachea, and spraying came in readily with the watery solutions. I preferred the latter, on account of my faith that too much paraffin oil going into the lower bronchi might not be brought back again. Not being observable, it was a question what would become of it.

DR. CORNELIUS G. COAKLEY, New York City: Chronic meningococcus carriers in the Rockefeller Institute were examined one afternoon by myself. The conditions found were almost identical in all—a most intense hyperemia, redness, with moderate swelling of the nasal, nasopharyngeal and pharyngeal mucous membrane. I have never seen such red throats, and none had had during the past four days any other local treatment so that I could not find any conditions there that were the result of local treatment. Of the twenty-seven, twenty-four had perfectly enormous masses of adenoids in the nasopharynx. I have rarely seen such masses of adenoid tissue in adults. They were great big husky men from the Middle and Far West, fine specimens of man-

hood, yet with masses of adenoid tissue bigger than my thumb, as proved by removal by Dr. Babcock later. In twenty-four that was the size. In two there were smaller amounts, and in one, none. One patient had a sinus involvement. I feel that neither the dichloramin-T nor any other disinfectant can have any great bactericidal or germicidal value when we find such masses in the nasopharynx as were present in these twenty-four cases. I believe that this was the cause of continued finding of the meningococcus. The results of operation will be noted later on. Last fall I had a smaller number, about ten, who were sent from one of the cantonments of the South to the Rockefeller Institute for study, and we found in all large tonsils and adenoids. When these were corrected, they promptly cleared up in two weeks, and they were long standing cases. So I think from what little I know at present, that if you have a smooth surface which can be readily acted on by the antiseptic, dichloramin-T, you will get good results, but if you have a rough surface its efficacy is much less.

Dr. Harmon Smith, New York City: I have had more or less success in employing this solution, beginning with dichloramin-T chlorcosane, in February. I believe that the most important point is to have the surface clean and the sinus clear of any invading pus or mucopus found there. In addition, we should not only bring the solution in contact with but force it into these rugae. I have shrunken the tissues down first, and then irrigated with an aqueous solution of some alkalin or normal saline, and afterwards instituted suction until there was no evidence of pus in the solution coming away. Then I have employed a syringe, which I have endeavored to impress on some as being efficient. It is loaded as an ordinary syringe, with a two per cent solution of dichloramin-T. Then, by turning the stop cock, I bring about a vacuum in the sinus, after which I turn the cock and force the solution in, using the vacuum together with the force of the syringe to force in the solution. I have had more success with the dichloramin in oil than with the aqueous solution. This method has been more or less condemned by some, and they may have their reasons for it, but in my hands it has met with considerable success. In addition to the treatment of the patient it is necessary for the patient to do something in the interim between the calls at the office. I give the patients a weak solution of adrenalin, with which they spray their noses first, and later with a normal salt solution they irrigate the nose until the first outpouring of mucopus is over. I also give them a bulb that will give, on the Sorenson machine, a ten degree registration on the dial. Employing this at home, they can keep the sinus more or less free from mucopus, and one then has less to get out in the office before employing the injection with the syringe.

Dr. Emil Mayer, New York City: My experience with this solution in oil many months ago was that it produced so much irritation in the cases of otitis that I was rather chary about its use in cases in which there was much sensitiveness of the mucosa, so that I have recently been using the watery solution in cases of bronchiectasis and bronchial abscess, washing them out, and at the same time using the suction apparatus, and then throwing in the watery solution. I took a number of the cases that were under observation and, for control, used the old solution of iodin and carbolic acid, and in the others I used the chlorcosane. The site of application is in the bronchus. Drawing out the very excessive secretion by means of the suction apparatus, which was attached to a double tube, the irrigation could be continued while the suction was being used. Our experience has been of such short duration that I am unable to do more than report a decided amelioration of the worst symptom of the patients, the odor. Whether we can use a solution in oil in the bronchus remains to be seen. I will experiment later on, and hope to get better results with the oily solution.

Dr. Robert Clyde Lynch, New Orleans: I have used dichloramin solutions, both aqueous and oily—the oily in two per cent as described. In the sinus cases, especially the antrums, a few of the sphenoid involvements and four broncho-sinus cases we irrigated the sinuses first with

normal salt solution, following this by irrigation of the sinus with the aqueous Carrel-Dakin solution. Then we instilled into the sinuses—and antrum, frontal and sphenoid—thirty minims to a dram of the oily solution. This was naturally followed at first by an apparent increase in the inflammatory state of discomfort which lasted on an average for about six hours. On the return of the patient the following day, we washed from the sinus apparently more secretion, but it was usually changed in character. That is, instead of the secretion showing a tinge of blood or being bloody, there was on the patient's return what appeared to me to be an excess or an irritation of what would be a normal mucous membrane. In other words, the washing from the sinus lost the "peculiar mucopurulent sanguinous type, and was changed to a thinner watery discharge having a considerable amount of apparently clear mucus. In the cultures taken from these washings there was a notable decrease in the diplococci, but the usual history of the time of clearing up of the sinus did not seem to be shortened to any great degree. In other words, running parallel cases, we found as the winter wore on, that we were able to accomplish almost the same results by irrigating the sinuses with a normal salt solution or with a solution of permanganate of zinc. We were able to accomplish convalescence in about the same time as with the dichloramin solution. We then tried simply washing the sinus with a plain tap water, following that with the instillation into the sinus, through the canula, of from one to two drams of two per cent dichloramin oil and allowing that to remain in for as long as it would stay, requesting the patient to sit upright and refrain from blowing their nose. They apparently kept the fluid within the cavity for quite a considerable period of time—so much so that even on washing it out the next day you were able to detect distinctly some remaining odor of the chlorin. This plan was followed by the same reaction, but the convalescence in these cases was cut down apparently from two to four or five days. After the instillation of the first oil and the washing of the second day, we instill the oil for the second time. Then, if the symptoms were not too violent, we refrain from any further intra-sinus medication. We did not try to wash the sinus out, but allowed the oil to stay in and gave the sinus a period of rest of about four days. In these cases the convalescence was shorter, the pain was less, and the patients came through in a most satisfactory manner. We used the dichloramin oil on tampons in cases of acute suppurative otitis requiring tympanotomy, and found that the first reaction was, as Dr. Mayer suggests, quite marked. The drum would be reddened, the canal would be reddened, but with a period of twenty-four hours of rest, the discharge would change in character from the serosanguinous discharge to one made not of blood but of an excessive secretion of what apparently was normal mucus. In other words, the secretion was white and clear. In the acute suppurative cases, some of them we felt were aggravated by the use of the dichloramin oil tampons, and we discontinued their use not being able to accomplish the convalescence of the individual in any less time than we had by other means. We used the dichloramin oil in the acute tracheal cases, cocainizing the trachea rather thoroughly and introducing into it, by means of a tracheal canula or syringe, thirty minims to a dram of the dichloramin oil solution. This was followed in one or two instances by considerable spasms of short duration, but by very rapid amelioration of the symptoms. In other words, that peculiar dusky red, that intense redness of the mucous membrane, could be seen to be much less upon the next examination. The cough was less, the distress was less, and these cases of what we diagnosed as acute tracheitis cleared up apparently very much more rapidly by the use of the dichloramin oil than they did by other means that we have been using before, but as far as the use in the sinus is concerned, we were not able to feel that we had been giving something which shortened the period of convalescence. In the ear cases, some of them were made worse, apparently worse, by the application and we discontinued its use. In the tracheal cases we saw real, decided benefit.

DR. J. PAYSON CLARK, Boston: I learned that it was important to avoid the use of any metal in the canula or syringe in its application. I should like to report one case of chronic pansinuitis in which all the sinuses had free discharge from them. In this case I used this solution. I washed the antra out, and the left sphenoid was involved. I washed it out with normal salt solution and boric acid, and irrigated the sinuses —the right and left frontal, the left sphenoid and right antrum—with a Dakin watery solution. The patient went home and had a headache and so much malaise that she went to bed. She absolutely refused to have me continue this treatment, although she was better the next morning.

CLOSING DISCUSSION

DR. D. BRYSON DELAVAN, New York: Formerly when eucalyptol was employed, that solution was found to be irritating. For that reason Drs. Dakin and Dunham devised the "chlorcosane." Almost anyone with a little experience in chemistry can prepare it, but the Abbott Company furnish it under the formula of Dr. Dakin.

Regarding the important subject of disinfection of carriers, I know nothing that has come out on this subject better than the candidate's thesis of Dr. Friedberg in the last volume of our Transactions. Not only may the crypt of the tonsil contain the offensive germ, but it may penetrate into the tissues of the wall of the crpyt to such a considerable depth that even when the disinfectant is brought into contact with the wall of the crypt it does not reach the buried microorganism. The disinfection of the sinuses, too, is a difficult matter. Friedberg believes that when infection has persisted for three or four weeks in spite of treatment, then operative measures are distinctly indicated. There may be some cases in which operation, however, does not seem expedient with them. If we can find a reliable disinfectant we are in a much better position than we should be without it.

Paralysis of the Recurrent Laryngeal Nerve Associated with Pulmonary Tuberculosis. A. D. WILSON, *Southwestern Medicine*, August, 1918.

Alterations in the quality of the voice are of common occurrence during the course of phthisis. These changes vary from slight huskiness to complete loss of voice. Hoarseness or loss of voice may be due to tuberculosis of the larynx, simple inflammatory changes, syphilis, neuritis or paralysis of the nerves which innervate the laryngeal muscles. Paralysis of the recurrent laryngeal nerves in tuberculosis is due to pressure from a thickened pleura or enlarged tracheal or bronchial glands. The paralysis may be either unilateral or bilateral. In making a diagnosis of tuberculous laryngitis the mode of onset should be carefully considered. Changes in the voice due to paralysis come on suddenly without previous irritation. Tuberculous laryngitis is always slow in developing and is accompanied by more or less irritation and distress.

ED.

JOINT MEETING OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION AND THE AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

The joint meeting began with a Symposium on Bronchoscopy, the first paper of which was one entitled "Localization of the Tracheobronchial Tree; Preliminary Report of a New Method," by Dr. Chevalier Jackson, Philadelphia, Pa.

The Bronchial Tube: Its Study by Insufflation of Opaque Substances in the Living. CHEVALIER JACKSON, M. D., Philadelphia.

1. In intrabronchial insufflation with opaque substances, in the living, we have a measure of the greatest usefulness in mapping out the tracheobronchial tree in foreign body cases in which a foreign body is far in the upper lobe bronchi or in other small bronchi that cannot be entered by the bronchoscope. A stereoscopic pair of radiographs will show the bronchi in situ in the living, and the bronchi can be followed in the fluoroscope.

2. The intrabronchial insufflation of dry bismuth subcarbonate, through the bronchoscope, in sufficient quantities to cast a shadow did not produce any untoward symptoms, and the bismuth totally disappeared from the lung by expectoration in twenty-four hours.

3. The insufflation of dry powders and the injection of opaque fluid mixtures through the larynx gives a degree of visibility of the trachea and larger bronchi in the radiograph; but the results are not as good as when the insufflation of a dry powder is done through the bronchoscope.

4. The method is available for an enormous field for investigation of the action of the living cilia, in health and disease, the lymphatic drainage of the lung, the mapping out of bronchietatic and abscess cavities, etc.

Suspension as I Use It Today. ROBERT C. LYNCH, M. D., New Orleans.

The patient lies flat upon the table with the head extended; the crane is attached as far back on the table as is possible, allowing only sufficient room to turn the handle which moves it horizontally; the vertical position of the crane will now be on a line with the patient's shoulders. The mouth is open wide by placing an ordinary mouth gag in the left angle of the mouth, and this is steadied by the assistant, who has only to keep the head extended in the middle line, there being no need for support, since the head is resting on the table. The hook is the same in its every detail as presented to you before, and we have done away with the long tooth plates and dental spoons. The gag of the hook, instead of being closed, is now introduced sufficiently open to permit a view of the tip of the spatula.

Instead of passing the spatula along the postpharyngeal wall, he now follows down along the base of the tongue until the epiglottis is seen, then it is lifted with the spatula just as one does in bronchoscopy, and by this time the short tooth plates will fall behind the teeth, when the gag is opened wide to fix the tongue and epiglottis. Now the hook is placed upon the crane and the worm gear joint turned to bend the hook slightly to an obtuse angle. The crane is lifted in the vertical to flatten the base of the tongue, and this will raise the epiglottis so that the larynx will come into view. If the view in this position is not already sufficient, then moving the horizontal crane toward the head of the table will bring the anterior commissure into view far better and much easier than the old method.

This differs from the older technic in that the head is flat upon the table, and any untrained assistant can hold it steady, and the patient is not dragged over the top of the table as before, and the mouth is wide open with a gag giving plenty of room for the introduction. There is no

necessity for the table to be cut, as has been described, nor for the projecting platform, since the crane is attached far back on the table behind the patient rather than ahead of him. There is no danger of dropping the patient from the crane or from the spatula, since the head is not lifted from the table, or, if so, just enough to procure sufficient tension to flatten the tongue.

The view is much more natural, and, if anything, clearer and less distorted, since there is much less tension at the region of the hyoid bone and the base of the tongue. The vocal cords, instead of being stretched anteroposteriorly, are now more relaxed, as shown by the respiratory movement under ether, and by the tones emitted under cocain. This, of course, permits of more accurate dissection, especially when removing small tumors, such as vocal nodules. One looks now down the spatula along the line of the trachea and can usually see the bifurcation, as is shown by the possibility of introducing a bronchoscope deep into either bronchus.

In the old way, one looked from below up along the spatula, and it was impossible to get the bronchoscope further down than the fourth ring of the trachea. Consequently, in this new position, there is really no need for a table that can be elevated, though it is always a comfort for any operative procedure. Finally, the patient will complain much less of after pain about the angles of the jaw, back of the neck and of headache. There is much less danger of pinching the tongue between the spatula and the teeth of the lower jaw, and it is much easier, more rapid and more accurate to introduce in this way than the old way.

Some Original Methods of Treatment of Laryngeal Stenosis. SAMUEL IGLAUER, M. D., Cincinnati.

For patients who are wearing a tracheal canula, the author follows the same principle which underlies the use of rubber tubes in laryngostomy, which has the advantage of being employed without the necessity of splitting the larynx.

The methods used are:

1. Dilatation by means of a rubber tube doubled upon itself. The length of the tube when doubled should approximate, as nearly as possible, the distance from the arytenoid to the upper margin of the tracheotomy. A string is fastened to the rubber tube, which is wrapped clockwise about the stem of the tracheal canula, and then fastened to the patient's neck with adhesive plaster. This is to prevent the tube gliding past the tracheal canula.

Another string is allowed to protrude from the patient's mouth to serve as an extractor when the tube is to be changed. This method permits a certain amount of pneumatic pressure because of the air in the tubing.

The second method is the insertion of a single rubber tube from below. The third is intubating by traction.

In the latter two small holes are bored in the lower end of an intubation tube, one in its anterior and the other in the posterior surface of the tube. A stout silk cord is then passed through both these openings, while the head of the intubation tube is threaded in the usual manner.

Removing the tracheal canula, a cord is introduced through the tracheal opening until it presents into the mouth. This string is fastened to that attached to the lower end of the intubation tube. Traction is made with a guiding finger in the larynx, the intubation tube drawn down in position.

The diameter of these intubation tubes may be increased by stretching rubber over the tubes.

Finally, clamped Rogers intubation tubes may be employed.

DISCUSSION ON SYMPOSIUM.

DR. EMIL MAYER, New York City: While I have not tried the method Dr. Lynch described, it appeals to me in every way. Whereas in our old method we have hung up the patient and practically held the weight of his body on the teeth and the tip of the epiglottis, today that patient can, thanks to this method, rest on his back. Instead of hanging the patient

up, we are really only opening his jaws. We are getting much closer to his larynx, and are able to go in further. I have only words of praise to say of the method. I can understand that with the mouth wide open you are nearer and can see better to handle the patient with the fewest number of assistants.

I was particularly interested in the paper of Dr. Iglauer, as I had reported at the meeting yesterday the case of a boy who had worn an intubation tube for five years before I was able to do away with it. I want again to call attention to the fact of the extreme tolerance of the larynx to manipulations of various sorts. I rather feel that I should disagree with Dr. Iglauer in regard to doing a dissection and making an open wound in the larynx, if you can divulse it in any other way. I have always been able, after a comparatively short time, to have the opening wide enough in the cases that I have seen, to put in the ordinary uterine dilator, either from above or from below, and perferably the latter, and dilate the parts without making any wound.

Again I should object to the leaving of any cord in the patient's mouth and fastening it to the cheek. Those who lived in the early days of intubation thought that they could help O'Dwyer by leaving the cord fastened to the intubation tube in the mouth, but the cord was either bitten through or pulled out by the child, and the attempt was abandoned. My experience is that a piece of rubber tubing fastened at the upper and lower ends acts as a balloon and can be introduced in the manner described, which is quite the manner that I use.

One other thing: I prefer to keep the rubber tube in situ, leaving a double end of cord and tying it around the neck, rather than fastening it to the tracheotomy tube.

The ingenious method of holding an intubation tube in position by drawing it down is one that I think is extremely valuable. The speaker described a method of slow intubation successfully used. During the Spanish-American war he was asked to look after a soldier who had been in the battle of El Caney. Lying on his face, he had been shot by a sharpshooter who was in a tree. When picked up the injured man was bleeding from the mouth, a piece of tissue was hanging from the mouth, and there was an abrasion over the eye. The diagnosis made at the field hospital was that it was a glancing shot and that the eye was not injured. He was put on the transport and sent to Bellevue Hospital, where a tracheotomy was performed. He was walking around wearing a tube, and some ladies asked Dr. Asch and myself to see what could be done. As soon as I looked into the throat I saw a hole punched in the soft palate, as though I had put in a punch and taken out a piece. I learned that the man had been shot from above, the bullet going down through the maxillary bone, cutting the soft palate, smashing the thyroid cartilage, entering the esophagus, and passing out into the stomach spent, and finally passing per rectum.

I began slow dilation, and finally got the larynx dilated so much that I thought I could introduce an intubation tube, but as soon as I put it in, the man got blue. I had an intubation tube made of the same external size, but with a larger opening and with an introducer that was hollow, so that the minute it got in, the man breathed through the handle, and I could intubate him for any length of time. In that slow way I could get the intubation tube into the larynx. I mention this method because some things might arise in this present war.

Dr. Hubert Arrowsmith, Brooklyn: I cannot see how, referring to Dr. Jackson's method, in view of the fact of the little harm that was done in the old days by copious insufflations of powder into the air passages, a little bismuth could do lasting harm, and I should think that this method would be of extreme value in helping us out in these very uncertain and difficult to locate small foreign bodies. Since I heard Dr. Lynch speak of this in New York last fall, I have used this method continuously, and I can corroborate his statement concerning the greater facility with which the speculum is introduced, the infinitely greater comfort with which it is retained by the patient and the improvement of the operative field.

DR. JOSEPH C. BECK, Chicago: I had a case of a man who had a lung full of coal. He showed a beautiful bronchial tree, and I made experiments with forced inhalation by means of the Billings inhaler of aniiin dyes that are radiographically obstructive. This picture, which I am sorry to say I did not bring, showed that if not the insufflation, perhaps the forcible inspiration of radioobstructive substances that would be vaporized might be of some value.

Some of you may remember at the American Congress of Surgeons, that I was going to demonstrate suspension laryngoscopy in a patient under general anesthesia, and was unable to put his head over the edge of the table. Finally I succeeded, with the patient's head flat on the table, and thought that made a bad job of the demonstration of suspension as then taught. The next day I asked this patient to bend his head back, and he said, "I never could; I have a stiff neck." I have employed this method, as demonstrated by Lynch, for a year. Three weeks ago I had a patient with a little growth in the larynx, of which I could not obtain a good view with the head on the table, but I succeeded very nicely with the old method, so perhaps there are some cases that would still be better handled with the old method. I do not know what was the reason—perhaps some anomalous condition about the hyoid bone.

The method that Dr. Iglauer spoke of, of using the full length intubation tube, I have used with satisfaction, and the new method that he has described today I will employ. I had a similar accident to the one he spoke of, in using the full length intubation tube. It did not perforate, but engaged in the wall of the trachea, and I had considerable difficulty in manipulating it. This method that he describes today will do away with some of these difficulties.

DR. HENRY L. LYNAH, New York City: Dr. Jackson has given us a great aid in bronchoscopic localization by his bismuth insufflation method, especially in difficult localization of small foreign bodies which do not show in the x-ray plate. I have used the bismuth esophageal capsule in many cases which did not show in the x-ray, and by this aid have been able to locate the foreign bodies and remove them.

As far as bismuth irritating the bronchi is concerned, there seems to be little discomfort about it. We have had two cases with tracheoesophageal fistula who complained of difficulty in swallowing. The diagnosis of tracheoesophageal fistula was made from the radiograph. After swallowing the bismuth meal there was a violent attack of coughing, and when the x-ray pictures were taken they showed the whole of the tracheobronchial tree in bismuth shadow. All of the bismuth was subsequently coughed out. After having had this rather unpleasant experience, neither of the patients returned to the hospital for further treatment.

I should like to ask Dr. Lynch whether he removes the apparatus after he passes the bronchoscope, especially when he has to rotate the head in examining the upper lobe bronchi. The improved Lynch position of the semiflexion of the head in the examination of the larynx is very advantageous, but there is no adantage of suspension bronchoscopy over the other methods which are much simpler in technic.

Dr. Iglauer has brought forward in his paper one of the most difficult problems which we have in surgery. It does not matter how you cure a case of laryngeal stenosis, as long as you get the case well. That is all we are striving for. The voice, in the final outcome, has been far better in the cases cured by intubational dilation than in those cured by laryngostomy. But when there has been extensive sloughing of the thyroid and cricoid cartilages and complete stenosis, laryngostomy dilated from below or from above, and the method of Rogers to dilate the stenosed larynx by means of urethral sounds from the tracheal fistula upward will dilate the larynx, but considerable force is necessary and often an esophageal false passage is the result. If you attempt to forcibly dilate from downward you invariably have a false passage as a result, and the case may succumb from meriastinal infection. Laryngostomy is by far the safest and best method of curing this type of case. As far as the string is concerned, I agree with Dr. Mayer that it is a very bothersome thing

to leave in the mouth and may also be a source of danger, for the child can easily remove the tube by constantly tugging at the string with the tongue. This is, however, impossible with the anchored tubes of Dr. Iglauer.

In cases who have recovered from acute laryngeal diphtheria the tube has often been detubated by the tongue of the child and may be in the esophagus and is noticed only at the time the nurse finds that the child has difficulty in swallowing, while the child has been breathing quite naturally during this time and the tube thought to be in place. If the to be in place. If the string must be left on the tube, it is far better to string must be left on the tube, it is far better to bring it out by means of a small catheter through the nares and attach it to the side of the face. This causes no discomfort, and the child cannot remove the tube with the tongue.

DR. FIELDING O. LEWIS, Philadelphia: I was especially interested in Dr. Iglauer's paper, and it has been my pleasure during the last year to have four of these cases operated on by the method of Dr. Jackson. I have some drawings which show three of these cases before and after operation, and wish to present Dr. Jackson's laryngoscopy tube with the rubber extension which I have used in all these cases, the advantage of which is that it prevents the formation of a tracheal spur between the tracheotomy tube and the extension, whatever it may be, above. It also permits breathing through the tube, the upper part not being completely closed.

DR. JOHN W. MURPHY, Cincinnati: Before Dr. Iglauer devised this method, as we usually worked together, we had a good deal of difficulty in getting these cases so that they could leave the hospital. They were with us for months at a time. In several of these cases, and the one which he mentioned, too, there was absolutely no opening from the upper part owing to the patient's having worn a tracheotomy tube until the upper part of the larynx had closed, so that even a filliform bougie could not be passed. By means of a fine sound, however, we succeeded in getting a minute opening through this membrane. It is not safe to attempt to enlarge the opening with any instrument. We find that the moment we can get the finest probe through and carry a string down and draw the tube up, we take much less risk of doing damage, and by this continuous method of dilation we get much more satisfactory results than by any other.

The method of Dr. Lynch has been employed sometimes by me since I saw him use it, about a year ago. I find it simpler and very much more comfortable to the patient.

DR. GEORGE F. COTT, Buffalo: I had the same experience as Dr. Beck. In my case the patient had difficulty in breathing. I put him under ether and tried to introduce the bronchoscope and found that I could not put the head back far enough. The next day he told me that he had ankylosis of the vertebrae of the neck. That is a thing that does occur now and then.

DR. WOLF FREUDENTHAL, New York City: It seems to me that the method of Dr. Lynch is a great improvement over the old one, yet I am not ready to give up the original Killian method with the head hanging down, for a certain class of cases. I operated with suspension laryngoscopy in a tuberculous case in which any effort on the part of the patient was not desirable on account of hemorrhage. For this class of cases the new modification is really excellent, but we encounter cases in tuberculous patients which do not go as you want.

DR. ROBERT C. LYNCH, New Orleans: I want to correct a wrong impression on the part of Dr. Cott. Cases of the acute type would get well sometimes, and when the child was recovering from the stenosis lesion the tube could be easily coughed up without anyone knowing of it. We recently had admitted to the hospital a child that had had a tube put in by a specialist. The child was then sent to the hospital, and when he got there the tube was stuck to the side of the mouth. He was cyanotic. One of the house staff pulled the string and found the tube was probably

in the stomach. The child can cough the tube out when the stenosis is subsiding without there being any evidence of it.

DR. HARMON SMITH, New York City: A few years ago Dr. Lynch reported no recurrences after removing papilloma, and I thought that he had solved this problem. It would be interesting to know whether the growths were single or multiple, and whether single or multiple in children or in adults, because I think that the class of growth materially affects the problem of recurrence. In the multiple variety in children the more they are interfered with the more they recur, and even after all methods have been tried the tracheotomy tube for a long length of time is, I think, one of the safest modes. Secondly, the removal of a growth in an adult and its non-recurrence does not assure us that after removing a papilloma in another adult it will not recur. Papillomata vary in type, in malignancy and in tendency to recur, and from the pathologic standpoint you are unable to deduct whether or not the tumor will recur. Another point that I should like to have brought out by Dr. Lynch, is whether he has ever employed fulguration alone, because, with the suspension, as he employs it, the surface of the larynx can be made as dry as the face, and I have always contended that if you can dry the surface of the papilloma in the larynx and can be sure that it will remain dry during the fulguration, the fulguration will overcome it—except in the multiple variety in children.

CLOSING DISCUSSION ON SYMPOSIUM.

DR. CHEVALIER JACKSON, Philadelphia: So far I have used the method presented only in cases in which it promised benefit to the patient, directly or indirectly, for localization or therapeutic effect. It remains to be determined whether or not we may expect benefit to chronic bronchitis, pulmonary abscess and other lesions. I used dry powder, and it was coughed out completely in twenty-four hours. Possibly other preparations might not be so rapidly gotten rid of. I hope Dr. Arrowsmith will try to devise a way of getting the dry powder or some suitable preparation down through the larynx without having to pass the bronchoscope. The method then would be of general application by the roentgenologist. Localization, individual variation, bronchiectasis, abscess and other pathology could be readily demonstrated.

The treatment of obstinate tracheal stenosis has been a hobby with me for many years. The method developed by Dr. Ellen J. Patterson and me gets the patients well. Our experience coincides precisely with that of Dr. Lynah as to the indications for laryngostomy. Our experience also coincides with that of Dr. Mayer and Dr. Iglauer in regard to the use of another method when one method does not succeed. In laryngostomy the operation is of less importance than the after care. Too many cases are reported too soon. Dr. Patterson insists on a period from one to three years before doing the plastic operation for closure of the laryngostomic opening. One of our patients who lives in Chicago was recently sent to Dr. Beck for plastic closure, and I think he can testify to the widely open larynx obtained by the method devised by Dr. Patterson and me.

DR. ROBERT C. LYNCH, New Orleans: In response to the question of Dr. Lynah as to whether we removed the suspension in bronchoscopy, especially in work on the upper bronchi, I would say that it is preferable in these cases to do the bronchoscopy without suspension, the apparatus being used for the simple passage through the vocal cords. When it has entered the trachea, the suspension has served its purpose, and the rest is better done without the suspension apparatus being in situ. The only exception is where there are multiple foreign bodies, when it is necessary to introduce the tube several times, and retention of the apparatus will save the traumatism induced by passing the apparatus through the larynx of an infant or young child.

Replying to Dr. Smith, all of these cases were put in this appendix on the recurrence of papilloma after dissection purposely to contradict my statement made at first, when I reported sixteen cases of papilloma of the

larynx removed by the dissection method without recurrence. I had had no experience with recurrence up to then, but since then the cases have increased, and my knowledge in proportion, and we have had these five recurrences after dissection by means of suspension. I reported that particularly to contradict my own statement that there were no cases of recurrence.

The cases were all multiple. They were all in children, and I brought out the point that they recurred after some inflammatory attack in three instances, and without reason in two. I have used fulguration, and believed that in the multiple cases possibly it is better than dissection. Recently I have been drying the papilloma by swabbing the surface first with alcohol and blowing in compressed air to dry out the water that is in the papilloma and then fulgurated it.

DR. SAMUEL IGLAUER, Cincinnati: As a matter of fact, I do not always leave the string in the mouth, but I find that it takes a little time and trouble to depress the tongue and find the tube by the ocular method. The question is, How sharp are the teeth? We have one little fellow who has very sharp teeth, and he usually chews through the string. As far as the tube's being coughed up and getting into the esophagus is concerned, that is impossible in this method, because the tube is anchored below. I find that by leaving the string in the mouth it is easy to make the change when I want to put in a fresh tube. I think that we should devise all methods we can to facilitate treatment, because no matter what method is used, the chief things are persistence and patience. If you can save the time in your daily work, it counts, both for yourself and the patient.

So far as I know, there has been no spur formation. When one uses the intubation tube, one can work the rubber covering downward on the posterior lip of the tube, and that prevents the formation of a spur.

As for laryngostomy, there is no objection to it in special cases, but if one can treat a case without splitting the larynx one is better off.

The Activities of the Subcommittee of Otolaryngology, Section of Surgery of the Head, Surgeon General's Office. CHARLES W. RICHARDSON, M. D., Chairman.

This committee, consisting of Dr. Richardson, Dr. Shurly and Dr. Mosher, presented to the Surgeon General the resolution of the societies they represented as to the need of establishing a division of the Medical Corps of the Army and Navy, to assume charge of injuries of the head and air passages and the diseases of the eye, ear, nose and throat, acquired in service, in addition to making special examinations of aviators and the employment of hospitals and their staffs for this purpose.

The Surgeon General of the Army promptly appointed Major T. C. Lyster as an advisor to the committee, and the Surgeon General of the Navy appointed Surgeon G. E. Trible, and these two, together with the original committee, were subsequently appointed by the General Medical Board of the Council of National Defense as a subcommittee on the nose, throat and ear, of the Surgical Specialties.

This committee listed five thousand six hundred names of otolaryngologists, adopting the questionnaire already prepared by the Subcommittee on Ophthalmology. The lists were indexed by volunteer typists, the questionnaires addressed and mailed, and the replies disposed of, and a competent stenographer appointed.

Advisers in each State were appointed to co-operate with the committee as to the standing of individuals and their classification. All information was thus thoroughly catalogued.

Of 5,468 questionnaires sent, 2,014 replied, while 3,474 failed to answer.

The Subcommittee on Ophthalmology was combined with that of Otolaryngology for such purposes only as might be required, each still retaining its individual identity.

A request was made to the General Medical Board of the Council of National Defense that the Subsections of Laryngology and Otolaryngology and the Subsection of Ophthalmology should meet in joint session.

A request was made also for the addition of a Brain Surgeon to the Ophthalmologic Section, and an Oral and Plastic Surgeon to the Otolaryngologic Section, thus completing the Division of Surgery of the Head. This request was also promptly approved by the Surgeon General of the Army.

Dr. William H. Wilmer was made chairman of the joint Section of Surgery of the Head. Dr. V. P. Blair and Dr. Bagley were made members of the subcommittees.

The Subcommittee on Otolaryngology was formally approved by the Council of National Defense on August 15, 1917.

The following activities for otolaryngologists have been established:

Suggestions for a one thousand bed hospital for the Surgical Head Section on the Western front abroad were presented to the Surgeon General and approved. The members of the subsection visited various large cities and addressed otolaryngologists to arouse their enthusiasm and gain recruits to the Army Medical Service; otolaryngologic instruments standardized; requirements for entrance into the Army as to hearing revised; tests for malingerers assembled; tests made to ascertain the value of ear protectors; plans for a special hospital and dispensary building in cantonments for the Section on Surgery of the Head; the activities of the subcommittee outlined and sent to the members of the national societies; the appropriate grade of the assignment of the various candidates in the Medical Reserve Corps was indicated by the members of the committee in the office of the Surgeon General; an accurate tab on the professional qualifications and character of each candidate for service was had; the assignments in otolaryngology at base hospitals and cantonments; a roster of men to be assigned in base hospitals abroad (in preparation); a course of lectures at the cantonments by the Chiefs of the Otolaryngologic Staff ordered, the officer designated to deliver the lectures, subjects given for the lectures, and a list of the books for the library prepared.

Major H. W. Loeb of St. Louis was assigned to the office of the Surgeon General to prepare a War Manual of Otolaryngology.

Major B. R. Shurly resigned, and Major J. H. Bryan was nominated by the Council of the American Laryngological Association to the vacancy. This was approved.

Major Mosher was ordered abroad on an inspection tour with Lieut.-Col. Lyster, and Major Richardson to temporary duty in the Surgeon General's office.

Exhibits are presented indicating the various subdivisions of the Surgical Service approved by the Surgeon General. Finally, Col. Richardson presented a report on the proposed reconstruction of the defects on hearing and speech as a result of casualties in war.

This exhaustive and comprehensive report is accompanied by exhibits in detail.

NEW YORK ACADEMY OF MEDICINE

SECTION ON LARYNGOLOGY AND RHINOLOGY.

November 27, 1918.

An Unusual Form of Laryngeal Paralysis. Dr. E. R. Faulkner.

The patient, a man 42 years of age, came to Dr. MacKenty's clinic four weeks ago. He complained of hoarseness and spoke with considerable muscular effort. He gave the following history:

Last February he got up one morning and found that he was hoarse, and his tongue seemed swollen on the left side. He also had difficulty in swallowing. He felt feverish, as if he had a cold, but kept going about his business. He also noticed a slight weakness in the left arm. In a few days he felt better as to his general condition, and was able to swallow better. By the end of two weeks this function had returned to normal; the arm also began to grow stronger. He still had a feeling of heaviness in his left shoulder, however, and the hoarseness continued as bad as at the onset.

After a month or six weeks, he noticed a depression above the left clavicle and the left side of his neck seemed somwhat smaller than the right. During the past few months he thinks his neck has filled out somewhat, and he does not feel the heaviness in his shoulder. His general health has been excellent and the only thing that bothers him now is the hoarseness.

On examination he has complete paralysis of the left vocal cord. The left arytenoid rotates outward slightly on inspiration. The trapezius, sterno-mastoid, and omo-hyoid have undergone considerable atrophy, more especially the latter two. There is normal function in the muscle of the tongue and the arm.

Diagnosis. Obviously this is not a local lesion of the recurrent laryngeal. At first it appeared that a lesion of the spinal accessory might account for the whole phenomena since we know that the main supply to the tongue comes from the accessory portion of the spinal accessory where it joins the ganglion of the trunk of the pneumogastric. This also would account for a paresis of the sterno-mastoid and trapezius. It would not, however, account for the disturbance in the tongue, omo-hyoid, and left arm. To account for these, one must presuppose involvement of the cord in the upper crucial region, probably as low as the sixth or seventh. The second and third cervical give a branch to the hypoglossal which supplies the geniohyoid and omo-hyoid. The main part of the lesion, then, seems to have located in the nucleus of the spinal accessory and in the motor nuclei of the cord in the second and third upper cervical segments, the involvement below this being transitory.

There were no sensory phenomena at any time. Such a lesion with sudden onset limited to motor nuclei with partial recovery which has slowly continued with slight general symptoms at the onset points very strongly to a poliomyelitis in which the nuclei of the spinal accessory bore the brunt of the attack. I may state here that the Wassermann and general reactions were negative.

DISCUSSION.

Dr. Carter said that the case was beyond discussion by any except the skilled anatomist unless one had made a special study of it and so become proficient. Dr. Faulkner certainly deserved a great deal of credit for the manner in which he had worked up the case, involving such a difficult problem.

The Introral Radiography of the Accessory Nasal Sinuses. DR. MAX UNGER.

I started work on the method of radiographing the nasal sinuses which I am about to describe about a year ago and up to a few days ago I believed that this method had never been used before. I learned last week, however, that Dr. Pfahler, of Philadelphia, had described a similar method in 1916. The method is evidently not well known to nose and throat men and is, moreover, so good for the examination of the sphenoid and ethmoid sinuses that I think it ought to be presented to you now and its use urged upon you.

I use a film cut to the size and shape of the one I hold in my hand. It is wrapped in light-proof and water-proof paper, stiffened with cardboard to protect it from the teeth and distortion, and inserted into the patient's mouth, narrow end first, as far as possible. The x-rays are shot down from above the head, at right angles to the film. The resulting picture shows all four sinuses separate and distinct from each other.

The first two pictures I will show are those of cadavers whose sinuses were injected with bismuth to determine their size and location on the film. Not only the injected cells but also the uninjected cells are shown in great detail. The sphenoids are seen at the apex, the ethmoids on either side of the septum, the antra about the back teeth, and the frontals in front of the teeth. All the other pictures were taken on cadavers, except the last, and show the sphenoids and ethmoids very clearly. They illustrate the intercommunicating, labyrinthine and irregular character of the cells and are, perhaps, an index to the reason why operations on the sinuses are not always as successful as we want them to be. The last picture was taken from a living person and shows the sphenoid and ethmoid cells as clearly as those taken on the cadaver.

Apart from the aid that this intraoral method of radiography of the sinuses can give us in the diagnosis of disease, there can be no question of the purely mechanical or strategic help it can give us in operations on the sinuses, especially of the ethmoid and sphenoid. Before operating, an intraoral radiograph will tell us of the location, number, shape and size of the cells. After operating, it will tell us what we have done and what more has to be done. We will not have to stab and scrape around in the dark. When a dentist fills a tooth he takes a picture before and after filling and if the filling is not complete, he repeats the process, perhaps a number of times. When we operate on the sphenoids and ethmoids, where a little slip may mean penetration of the orbit or brain, ought we to use less care in mapping out and checking up our work than the dentist uses in filling a tooth? Certainly this method is so simple that we ought to make the fullest use of it.

DISCUSSION.

DR. GUTTMAN asked what were the advantages of this method over the old method of placing the plate on the top of the head which hangs down.

DR. HUBBARD asked for further information in regard to the injection of bismuth,—how it was done before the x-ray was taken.

DR. UNGER replied that he used it only on the cadaver, not on the living subject.

Dr. MacKenty said that everyone was familiar with the method of taking these plates with the light below, including the mandible, but that the method presented by Dr. Unger gives a much better definition of the cells than the older one. With the older method, one can differentiate the sphenoid from the ethmoid, but cannot determine whether or not the sphenoid is diseased. If Dr. Unger's method can determine that point, it will certainly prove of great value.

the film as close as possible to the part to be photographed. This les-

DR. UNGER, replying to Dr. Guttman, said that the idea was to get sens the diyusion and gives a more definite outline.

The Successful Disinfection of Non-Suppurative Infections of the Upper Air Passages. DR. D. BRYSON DELAVAN.

(To be published in a subsequent issue of THE LARYNGOSCOPE.)

New Brunswick, N. J., Nov. 27, 1918.

Dr. D. Bryson Delavan said that one of the men who was particularly interested in the manufacture of these products was present, and asked permission for him to read a statement in regard to the chemical nature of the Dichloramine-T.

MR. HARRIS spoke as follows:

Following our conference of yesterday in your office, I gladly report to you the following physical and chemical factors which we have accepted as standards for Dichloramine-T and Chlorcosane. I may say that these are about what you will find required by the A. M. A. Council as listed in their book upon Non-Official Remedies. These standards, which we have adopted, are a result of our manufacturing experience, combined with the advices of the Army and Navy.

DISCUSSION.

DR. I. W. VOORHEES inquired regarding the interval between treatments; was it used once or twice a day, and for how long? It would also be interesting to know what experience Dr. Delavan had had in treating the larynx or bronchi with the Dichloramine-T. In the Manhattan Eye, Ear and Throat Hospital, with which Dr. Voorhees was connected, both he and Dr. Kernan had been using it very extensively in tracheitis and bronchitis, employing the intratracheal cannula one-half c. c. of 2 per cent solution, or spraying mainly with a 2 per cent solution, and had achieved some very good results though the cases had not yet been tabulated. One reason which seemed to account for failure in some of the cases was a lack of care in the technique. It is very important that the oil should not be overheated; if it should be heated to 125 degrees, it would become acid. It should be warmed over a water bath and not over a flame, and should be tested with litmus to see that it is neutral and not acid, as Dr. Harris described, otherwise it will prove irritating to the skin and mucous membrane. It should also be made up freshly,—perhaps every day,—and not allowed to stand over for several days. Although the manufacturers claim that it is very stable, we feel that it is safer when freshly made. This new antiseptic treatment seems destined to revolutionize the management of infections of the nose and throat.

Dr. Voorhees said that on Monday, November 25, he had read a paper before the County Medical Society in which he had spoken of using the Dichloramine-T in the nose and throat in acute exanthemata and in general infections of the respiratory tract. If an honest attempt be made to sterilize these cases, one can do a great deal for them.

Dr. Voorhees said further that he had seen the Lingner spray apparatus used at the Rockefeller Institute. This is very cumbersome and quite unnecessary for the treatment of the naso-pharynx. If one places the patient on his back on a couch or table with the head hanging free, he can drop the Dichloramine-T through the nose with a long, thin, glass pipette and it will remain in the naso-pharynx as in a basin. Lt. Col. Haskins has treated 400 cases at West Point with the Dichloramine-T, men who have come from various cantonments all over the country, and not one of them has developed influenza. He used a power spray, with the head hanging free as described.

DR. GEORGE E. DAVIS asked if Dr. Delavan had tried the Dichloramine-T in cases of ozaena.

Lieutenant J. A. Mulholland said that at the U. S. Naval Hospital, Brooklyn, they had tried the Dichloramine-T with influenza and similar infections, but had not obtained satisfactory results and its use had been discontinued, as the men hesitated to report for further routine treatment, for in most cases an acute Coryza was set up such as occurs in many people when Adrenalin is used locally. They have had at this hospital over three thousand patients under the direct supervision of

Dr. George A. Lung, Commanding Officer, mostly influenza and kindred infections, and so far have had no satisfactory results from Dichloramine-T except in pure Streptococcic infections of the throat.

DR. QUINLAN said the Section was to be congratulated for Dr. Delavan's presentation of the Dakin-Carrel Chlorine treatment of diseases of the upper respiratory tract. Dr. Delavan seldom if ever presents a speculative scheme of treatment until it has passed the Board of Censors. He always works out the problem carefully and is slow to accept the mushroom therapeutics of the hour.

He said further that he himself has been working for the past year along the same lines of chlorine treatment for sinus conditions and although the results are not as he expected he feels that he has not used the real proportions of chlorine as yet. It has been his custom to use cocaine and adrenalin solution to anaesthetize the parts and then irrigate with a warm salt or borax solution, thus cleansing the nostrils from the over-flow of the sinuses. He then irrigates the frontals and the malar sinuses with salt or borax solution. After this a four ounce of 2 per cent mixture of warm chlorazyne is thrown into the cavities. This is forced out slowly with hand pressure. The chlorine method of treatment promises to be the ideal one for our work, but the irritation of some patients who are susceptible would argue against its use excepting in 1 per cent solution.

DR. GUNTZER said that it has always been his impression that when one has to deal with the deeper infections it is necessary to resort to operative measures, such as the removal of tonsils and adenoids. He then asked if Dr. Delavan had treated any accessory sinus cases or laryngeal cases by his method.

DR. W. W. CARTER said that he had always believed that the infectious organisms in the mucous membranes had penetrated rather deeply beyond the surface, therefore it would seem that if the dichloramine-T is effective he would have to abandon that understanding.

DR. VOORHEES, in replying to Dr. Mulholland's remarks as to the failure of Dichloramine-T at the Navy Yard, said that probably they had been using chloramine instead of Dichloramine-T. If water is allowed to back up in the bottle while sterilizing the atomizer, or if heat is used, one obtains a very irritating solution and the patients will suffer more from treatment than from the original condition; but when the solution is properly made and used there is hardly any irritation.

Dr. Mulholland stated that the technique was as Dr. Delavan had described, using it mostly in outer conditions of the mucous membranes and not for a deep seated infection.

Papilloma of the Larynx Cured by Surgical Procedures. DR. JOHN E. MACKENTY.

The patient was a boy twelve years of age. Hoarseness began about six years ago. He was admitted to the Clinic in 1913, suffering from a severe attack of asphyxia. He was operated upon under suspension, and the larynx was found to be practically filled with papilloma. The operation relieved him for a period of three months, but his voice was never more than a whisper. Then he returned to the Clinic with labored breathing, and a second operation was performed in the same way, this time relieving him for five months. The third operation was like the others. This operation relieved him for a year, but he did not regain his voice. The last time he returned he was in such a condition that it was necessary to perform a tracheotomy. Three weeks later he was suspended and a complete and careful eradication of the papilloma attempted. That was in June, 1917. The boy has now completely recovered from all appearance of his trouble, excepting for a very little adhesion in the anterior commissure. He now talks in an almost perfect voice.

DISCUSSION.

DR. CARTER said that he had examined the case and he congratulated the Doctor upon the result. He also expressed the hope that he would report upon the case at some future time. It is quite common for these growths to return in the case of a young person; it would be interesting to know what happens in this case.

Dr. Carter then recalled a case which he himself had presented before the Section some eight years ago. It was especially interesting in that it showed the history of papilloma of the larynx undisturbed by operation, beginning in early childhood and persisting up to 47 years of age.

The patient was first seen by the late Dr. Gleitsmann who found him in bad condition and advised his immediate removal to the hospital, where he proposed to do a thyrotomy. However, Dr. Carl Reynolds, of Asheville, N. C., who brought the patient to N. Y. for consultation, did not approve of this operation and took him to a hotel. Dr. Carter was called in to see the case about 1:00 o'clock at night and found an emaciated man 47 years of age, cyanosed and suffering terribly with dyspnoea, he could not speak above a whisper. He stated that at five years of age he had an attack of hoarseness which lasted three or four weeks before he lost his voice completely, and from that time to this, his 47th year, he had been unable to speak above a whisper. He said that three years before coming to N. Y. he had been examined by a Laryngologist and the diagnosis of papilloma had been made, but no treatment given. Previous to this time his condition had been called asthma. He said that he frequently had violent attacks of dyspnoea and coughing, at which time he would expectorate small cauliflower-like masses.

After administering a hypodermic of morphine the patient became sufficiently quiet to submit to an examination of the larynx. This showed the larynx to be filled with fungoid papillomata; one especially large was attached to the left side of the larynx and acted as a ball valve on inspiration.

The patient was immediately removed to the hospital, and the next day, using the laryngoscope, Dr. Carter removed with the Sajous snare the large ball-valve growth, and every three or four days others were removed, in all eight, two of them being in unusual positions, one in the anterior and the other in the posterior commissure. These were removed with the Krause cutting forceps.

Some eight months after the operation the man regained his voice, and when last heard from, a few months ago, there had been no recurrence of the growth and his voice was only husky.

In such cases the endo-laryngeal operation should certainly be tried before doing a thyrotomy.

Dr. Carter then asked if Dr. MacKenty's patient gave any history of warts on his hands or feet. The patient of whom he had spoken stated that he had a great many warts during his childhood; the history of warts in these cases is common.

Dr. MacKenty, in closing the discussion, said that the tracheal canula was left in situ for three weeks; then, as the throat seemed clear, it was removed and had not been replaced. Many of these cases tend to get well of themselves. All that the surgeon does is to keep the patients from choking while the condition is undergoing a spontaneous cure. The case reported by Dr. Carter was a very unusual one. As to the warts, about which Dr. Carter had inquired, there was probably some relation between the two conditions. The boy was at his worst when last operated upon. It was a great surprise, however, when the boy came to his office a few days ago and addressed him in such a good voice.